

ANNUAL REPORT
OF THE
DEPARTMENT OF AGRICULTURE
OF THE
NORTH-WEST TERRITORIES
1901

PRINTED BY ORDER OF THE LEGISLATIVE ASSEMBLY



REGINA:
JOHN A. REID, GOVERNMENT PRINTER
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DEPARTMENT OF AGRICULTURE,

REGINA, *March 1, 1902.*

To His Honour

AMÉDÉE EMMANUEL FORGET,

Lieutenant Governor of the North-West Territories.

SIR,—

I have the honour to submit herewith the Annual Report of the Department of Agriculture for the year 1901.

I have the honour to be, Sir,

Your obedient servant,

G. H. V. BULYEA.

Commissioner of Agriculture.

REPORT

OF THE

DEPUTY COMMISSIONER

DEPARTMENT OF AGRICULTURE,

REGINA, *March 1, 1902.*

G. H. V. BULYEA, Esq., M.E.C.,

Commissioner of Agriculture.

SIR,—I herewith have the honour to submit for your approval the Fourth Annual Report of the Department of Agriculture for the North-West Territories, which contains a statement of the work done under your directions during the year.

In order to present the contents of this report in convenient form for ready reference, I have divided it into the following sections:

- I. Agriculture.
- II. Live Stock.
- III. Agricultural educational work.
- IV. Colonisation.
- V. Miscellaneous services.
- VI. Public health.
- VII. Office work and organisation.
- VIII. Appendices.

I.—AGRICULTURE.

WEATHER CONDITIONS AND STATISTICS.

In each Annual Report of this Department hitherto published a prominent place has been given to remarks on the meteorological conditions of the year and to tables of the statistics of temperature and precipitation. It may not, therefore, now be out of place to make a few remarks relative to those branches of meteorological science which affect agriculturalists generally, and more especially to those that affect the farmers of the Territories directly. All authorities agree that close attention to weather phenomena is essential to the successful pursuit of agricultural operations in any clime or country. Professor Frederick James Lloyd, Lecturer on Agriculture at King's College, London, in his work "The Science of Agriculture," says:

Of the many influences which affect the cultivation of the soil, limit the various crops which it will bear and determine the nature of the live stock suitable to a given place, none is more powerful than the influence of climate. Hence it is that every farmer should know the nature of the climate of the locality in which he lives and watch carefully the various changes which it is liable to. It is to be hoped that the time is not far distant when meteorological information will from day to day be widely spread among the agricultural classes, and understood by them,

Every civilised nation has recognised the necessity for encouraging the study of meteorology and has established and maintained central weather bureaux equipped with expensive and delicate apparatus and officered by men of eminent scientific attainments and experience. Such central stations are connected with vast systems of observation stations throughout the country, classed according to equipment, which are in constant intercommunication with the central bureau. Not the least valuable part of the work of the system is that done by voluntary observers whose operations are usually restricted to observations of temperature and precipitation, or to the latter alone. The central bureaux deal with meteorology in its widest scientific aspects. Their work is to collate and compile the reports of the observers, to make such special observations and investigations as require the use of sensitive instruments, to issue weather forecasts and storm warnings; and to publish the results of their work by means of bulletins, weather maps and reports. Systems of this kind are today in operation both in Canada and the United States, the headquarters of the respective services being in Toronto, where the meteorological service is a branch of the Department of Marine and Fisheries; and in Washington, D.C., where the Weather Bureau is under the control of the Federal Department of Agriculture, and employs 14,000 persons in reporting weekly upon the crops and the effects upon them of current weather changes.

The work of the meteorologist divides itself, for practical purposes, into two divisions: Weather forecasting and the establishment of average weather conditions for each section of the country. It is easy to see that grave difficulties exist in the way of applying any system of forecasting to the Territories, and it is therefore probable that the North-West farmer will have to learn to be his own weather prophet, and it may be claimed, with some show of reason, that by a careful perusal of the tables published by the Department annually, combined with frequent exercise of the faculty of observation, some proficiency in this respect may be attained, sufficient perhaps to save many dollars at haying or harvest time. Sailors, it is well known, with even less or no assistance, are often successful weather predictors.

It is, however, the latter class of weather information that the farmer is more particularly interested in. It is necessary for him to know, if he is to conduct his farming operations with any degree of intelligence, especially the temperature and precipitation conditions which will have to be encountered. In no other country in the world are the meteorological conditions at all similar to those obtaining in the Territories, the peculiar physical features of the country being responsible for this.

Again, the seasons of spring, summer, autumn and winter, as usually understood, do not exist so far as the Territories are concerned. Our agricultural year may be better divided as follows: Winter, November to March; seeding and growing season, April to June; ripening season, July and August; harvest season, or autumn, September and October. Considering these separately, the important influence of the weather is rendered apparent by the following queries:

Winter: What was the state of the soil as regards suspended moisture when the first permanent frost occurred? Is the weather of such a character as to favour threshing operations? Is the snowfall such

as to ensure good sleighing and the rapid marketing of grain when the price is generally most favourable to the farmer?

Seeding and growing season: What was the total depth of snow when the final thaw commenced? Did the snow disappear rapidly or otherwise? When was the ground in a condition to permit of seeding? Was the temperature and precipitation subsequent to seeding such as to ensure vigorous growth? Did any frost occur of sufficient intensity to inflict permanent injury on the growing crop?

Ripening season: Was the precipitation such as to permit of dry harvesting? Were there subsequent heavy rains or snowstorms which might tend to lower the grade of grain in stook?

These are a few of the questions which might be asked, but they are sufficient to indicate that meteorological conditions touch the farmer very closely at every stage of his work and at every season of the year; and the answers to many of them, combined with the statistical information, have a distinct interest for grain buyers, railway freight officials and others, and influence prices and affect credit to no inconsiderable extent; and these answers the meteorologist is called upon to supply and to publish.

For the stockmen also the publication of reliable meteorological statistics is of great value, as may be seen from the subjoined extract from a recent report of the Montana Board of Stock Commissioners:

The increased efficiency of the United States Weather Bureau is heartily appreciated by the Montana stock interests. These weather reports are circulated generally throughout the State, and we understand arrangements have been made for special storm warnings in certain remote localities. This service is of great interest and benefit to stockmen.

Very early in the history of the Department it was realised that the meteorological office at Toronto was under great disadvantages in dealing with the voluntary observers in the Territories owing to their distance from headquarters, and that, in order to get the best results, closer supervision of the work was required, which could only be rendered effectively by some authority in close touch with the observers, and that it was desirable that the facts concerning the meteorological conditions prevailing in the Territories should be presented annually in popular form, not only to enable our own farmers to make the best possible use of the short season, but for the information of those persons in other countries who were looking this way for new homes. It was consequently decided to follow in the footsteps of other provinces, notably Ontario and British Columbia, where much good work has already been done in this line by the local authorities. While it was realised that some considerable clerical work would be involved in the local supervision of this service and the compilation of statistics, it was expected that the results attained would amply justify the assumption of work which would cost the Department practically nothing and would each year be better appreciated. The Department did not ask or indeed expect any appropriation for this service. There was, therefore, but one plain course to take, namely, to make the best use of any existing machinery.

In the year 1897, previous to the Department's taking up the work, there were twenty-six meteorological stations in the Territories directly under the control of the meteorological office at Toronto. Of these, nine were managed by observers receiving a regular salary for their services and furnishing telegraphic and other reports on temperature, precipita-

tion, barometric and anemometer readings and other matters. The remainder were voluntary observers. It was felt that while the work of the paid observers could only be properly controlled by the head office, this Department could materially benefit both the meteorological service and the public of the Territories by assuming control of the voluntary observers, who must, out of necessity, be treated on an entirely different footing. With this end in view, immediately on the organisation of the Department in 1898, negotiations were entered into with Mr. R. F. Stupart, the Director of the Dominion Meteorological Service, who at once concurred with the views expressed and issued instructions bringing the proposed change into effect. That the result has justified the Department's action, will be readily apparent from the following statement:

YEAR	NO. OF VOLUNTARY STATIONS	NO. OF REPORTS FURNISHED
1897	14	127
1898	17	141
1899	25	204
1900	29	257
1901	30	300

Correspondence is now taking place with the view of making considerable additions to the number of stations, necessitated by the advance of settlement, and to further increase the efficiency of the service by closer supervision. At the present time all voluntary observers are furnished with supplies and instructions and make their returns through this Department, and it is but due to them to say that the Department very fully recognises the value of the work that many of them are so conscientiously doing; work that will perhaps be better appreciated by the public in the course of a few years than it is at the present time.

The list of stations and observers given in last year's report remains substantially the same, with the following exceptions: New stations have been opened, for temperature and precipitation, at Lethbridge, C. B. Bowman, observer; and at Melfort, A. E. Wild, observer. For precipitation only, at Broomhill, W. I. Birnie Browne, observer. The temperature and precipitation station at Moosomin, Marshall Smith, observer, has been placed under the Department's control. J. M. Eby replaces Thomas Copland as observer at Saskatoon; Staff Sergt. Lewis Hooper replaces E. H. Scott at Estevan, and J. J. Heaslip replaces Dr. J. A. Deyell at Alameda. The temperature and precipitation station formerly in operation at Duck Lake has been reopened with A. J. McKenna as observer.

Another point that was forced on the attention of the Department when the work was assumed was the fact that the information given in Weather Reviews issued by the meteorological service was not in a form in which it could be readily assimilated by the practical farmer of the West. It was plainly desirable that tables should be compiled presenting information, with respect to at least temperature and precipitation, in a concise and easily intelligible form which would facilitate the making of comparisons of the above conditions between month and month, and year and year, and between country and country, and show the averages

which might be expected. This work was therefore undertaken and the first tables for the Territories appeared in the first Annual Report of the Department for 1898, and the work has been continued in subsequent reports.

Tables are herewith presented as usual showing: (1) Annual precipitation for the last eleven years. This will be found to differ considerably from the annual precipitation table of former years, having been revised and corrected up to date. In the revised tables it is found that the Territories make a much better showing than appeared from the previous ones. A column has been added to this table showing the average annual precipitation for each month. Table (2) shows total precipitation for each month of the past year. Table (3) shows the mean, maximum and minimum temperature with the date of minimum for each month of the past year, and in order to facilitate comparisons with conditions existing in other provinces or countries table (4) shows the latitude, longitude and height above sea level of the various Territorial meteorological stations.

In addition to the above information the Department has, in view of the experience gained and the data accumulated, felt justified in showing more clearly the intimate relation which exists between meteorological conditions and harvest results. Table (5) has accordingly been prepared which shows the mean temperature and the mean precipitation, for each season of the agricultural year, for the past four years, together with the yield per acre of each of the three principal crops, in the several crop districts* into which the Territories have been divided for statistical purposes and for which sufficient data are available.

It is not proposed at this stage to enter into a critical examination of this table, in view of the fact that the figures do not cover more than four years. The table is given here more as a basis of future investigation along the same line and must necessarily increase in value as each year's results are added to it. No examination of it, however, should be made without reference to the temperature and precipitation tables already published, as well as the observers' remarks which follow them, as it is easy to understand that the occurrence of abnormal heat, cold or rainfall, for a day or two at any period during the growing and ripening seasons might have material effects on results, even if they did not influence the mean readings for those seasons. A casual inspection of the table is not without interest, and may serve to illustrate the above remarks. Taking districts 1, 3, 4 and 5, which cover the great wheat growing districts of Eastern Assiniboia, and considering the results in each for the last two years only, the result of the relatively high temperature in the growing season of 1900, combined with the lack of precipitation during the same period, compared with conditions shown to have existed during the corresponding period of 1901, are strikingly apparent by the difference in crop yields for those years. Another fact pretty well established by the table is that by far the heaviest precipitation as a rule takes place in the season July to August. Other matters of interest will doubtless disclose themselves to anyone who studies the various tables in a systematic manner.

* For full particulars with regard to crop statistics see section "Crop Statistics."

DISTRICT REPORTS.

JANUARY.—In the western portion of the Territories the month on the whole was exceptionally fine and mild. *Prince Albert*—Remarkably calm throughout the month, plenty of snow in country and good roads. *Calgary*—Although the new year opened with cold snowy weather, the record for the month has been very favourable and range stock of all kinds have done well, some ranchers claiming that the stock actually put on flesh since the 12th of the month. Since that day bright sunshiny weather has principally prevailed and the four inches of snow which fell during the first of the month rapidly disappeared. During the latter part of the month high westerly and chinook winds prevailed, mostly during the night, but of rather lower temperature than usually accompany these winds. While Calgary has had no sleighing excepting a few days early in the month, some portions of the surrounding country have had considerable. *Banff* had good sleighing the entire month. *Southern Alberta* has been practically without snow, and the stockmen are jubilant in consequence. Building operations carried on as in summer. *Regina*—First ten days generally severely cold. From 11th to 29th relatively the highest temperatures were recorded, but several bad storms, mostly from north and west, occurred accompanied by considerable snow.

FEBRUARY.—*Calgary*—February weather has been much the same as in January, with very little snow and a good deal of bright sunshine. Stockmen are in good spirits as up to date the season has been favourable, and even if a few bad storms do occur in March stock are strong enough to withstand them. Building operations have been as active as in January, stone and brick buildings being rushed to completion. *Swift Current*—Stock doing well. No loss reported yet. A stormy month, but weather fine now. Snow melting fast. *Regina*—In the east part of the Territories there was severe cold with slight snowfalls until the 10th; from 10th to 17th milder and some thaw. On the 17th a severe storm from the south-east, changing next day to north-west and continuing to 18th. Another severe storm from the north-west on 22nd was followed by calm cold weather up to 27th, when it turned mild and snow was melting. The western conditions were on the whole similar as to variations, but generally very much milder, and there is little snow left there. *Qu'Appelle*—Sparrows on 25th. Snow going rapidly. Roads good, stock looking well.

MARCH.—*Calgary*—The month of March has been for the most part fair and equable, with a good deal of cloudy raw weather, but excepting a few days in the beginning not very much frost and no heavy driving storms. Good beef is now being gathered from the ranges, and, unless unexpected storms occur in April, another prosperous year will be credited to the stockmen. In *Southern Alberta* near the boundary line seeding commenced on February 28th and has continued from time to time ever since. Gophers appeared about the 10th, wild geese about the 20th, and the first robin was reported on the 21st. Ploughing and seeding, though reported from many points, are not general as yet, and some places between Calgary and Edmonton have still considerable snow. *Medicine Hat*—On 21st wild geese seen and farming operations started in some districts. Grass turning green. From *Moose Jaw* east snow still lying, though slowly disappearing. Generally cold with high winds from north-west and south-east, amounting to storms on 3rd and

18th with low temperatures. *Qu'Appelle*—Crows on 20th, woodpeckers on 22nd. No advance in vegetation. Ice went out of rivers, Macleod and Lethbridge on the 1st.

APRIL.—*Calgary*—April has been a disappointing month to the stockmen as cool weather, with heavy frosts during the nights, has greatly retarded vegetation. This, with the unsatisfactory curing of native grass on the prairies last fall, has provided very poor fodder and the stock is generally thin, with considerable mortality in many places. No heavy driving storms have prevailed, however, and there has been very little precipitation. Seeding is not so far back as the end of March promised, and the spring is very late and backward. Trees have not yet begun to leaf, and the outlook is so far rather depressing than otherwise. *Regina*—In the eastern part of the Territories the weather was generally unsettled and mild during the early part of the month and the snow had nearly all disappeared by the 12th. Seeding was commenced in many districts but was stopped by a severe snow storm on the 15th, followed by three days of extreme cold. From the 20th to the end of the month it was warmer and the prairie flowers, birds and animals appeared. In the western portion of the Territories farming started early in the month but was hindered by a snowfall on the 6th. Seeding commenced about the 19th. *Swift Current*—A dry windy month. Thunder storms on 23rd and 25th, hail on the 15th, morning fogs becoming frequent. *Medicine Hat*—Seeding nearly completed. *Edmonton*—Seeding general; weather very favourable and soil in excellent condition. *Battleford*—This month has been dry and there is very little new grass on prairie. Rain needed to start growth. *Prince Albert*—Spring backward, but trees are now budding and seeding has commenced.

MAY—*Eastern Assiniboia*.—Seeding was delayed on heavy land, but was finished by the 23rd, and crops were well up by 30th. Local rains have occurred in some places, in others rains are required. General state of the crops most satisfactory. *Qu'Appelle*—Grain and vegetables well advanced. All migratory birds here. *Western Assiniboia*—Heavy rains near Medicine Hat between 17th and 21st. Crops never more promising. Vegetation generally advanced and hay good. *Swift Current*—Sunny, warm month. Fair amount of rain, prairie green, good feed. Stock looking well. *Saskatchewan*—Seeding well advanced by 6th. *Battleford*—Alternations of fair weather and rain have given everything a fine start. Grass very good. *Prince Albert*—Seeding about all finished. Vegetation well advanced. *Southern Alberta*—Crops well up by 8th. Snow at *Pincher Creek* and *Macleod* on 10th, heavy rains 18th to 23rd. Fall wheat up ten inches. 23rd very warm. *Calgary*—Weather which promised so badly at the beginning of the month has redeemed itself and vegetation has made great strides. The range stock, which were so poor at the beginning of the month, have picked up wonderfully, though not yet what might be expected at the time of year. The grass and grain are fully up to average years, while garden stuff is perhaps a little ahead. In the northern part of the district too much rain is feared. Hay should prove an abundant crop. *Northern Alberta*—Seeding mostly completed by 15th. Warm showers from 20th to 23rd. Conditions most favourable. *Edmonton*—Owing to favourable weather crops are making splendid progress.

JUNE.—*Regina*—In *Eastern Assiniboia* the month opened dry and

warm, followed by local rains at most points, often accompanied by thunder. Slight frost damaged garden stuff at eastern and south-eastern points on the 13th. Crop conditions most satisfactory. *Qu'Appelle*—Ground very wet, all crops growing rapidly. Haying commenced. *Western Assiniboia*—Heavy rains. Slight frost in *Medicine Hat* District on 12th. Grass luxuriant and hay good. *Swift Current*—A cool month, much precipitation. Garden produce well advanced. Hay almost ripe and prospects of good haying season. Fair amount of water in sloughs. *Alberta*—Excessive precipitation causing floods and damage in places. Snow fell. Crop and grass conditions excellent. *Calgary*—June has been wet and cold, snow falling on the 5th, 12th and 24th to considerable extent at station, but to much greater depth north and west. Although the prairie never looked greener, grain, roots and garden stuff are very backward, and nothing but hot, dry weather can ripen them before the time for snow and frost again. Cattle are looking well, but will not be ready for export as early as usual owing to too much moisture in the grass. The grass will also require a deal of hot sunshine without rain to cure properly for winter fodder. Between 3 p.m. on 23rd and 6 p.m. on 24th three inches of rain and melted snow fell leaving roads in a terrible condition and swelling the streams to an enormous extent. *Edmonton*—Growth slow owing to showery weather and cool nights. *Saskatchewan—Battleford*—Prairie hay and grass most abundant, and all grains and vegetables well advanced. *Prince Albert*—Crops progressing favourably. There has been rain every day this month, either here or in close vicinity.

JULY.—All districts report unusual precipitation and severe electric storms accompanied by bad hail in places, doing considerable damage. Many animals and some people killed by lightning and several buildings struck. Especially bad storm at *Moose Jaw* on 12th, and *Strathcona* on 10th. Difficulty experienced in getting hay in some localities owing to sloughs being full. Crop conditions still most favourable. *Edmonton*—Crops look very well. Haying retarded by heavy rains. Crop prospects very bright. *Battleford*—Grain now well advanced and certain of heavy crop. Hay plentiful but ranchers are having some difficulty in securing it owing to unsettled weather. *Prince Albert*—Weather now favourable for crops. Harvest in one week. Sloughs very full of water. *Calgary*—July weather has proved much more satisfactory than June. Grain is just heading out, but it will be fully a month before any is ready to harvest. The prairie grass is very rank and green, consequently although cattle are fat they are very soft and by no means ready for export. Garden stuff has attained a great growth, but is from two to three weeks behind recent years. A hot, dry month would ensure a good harvest. *Swift Current*—Very rainy month. Thunder storms on the 10th, 17th and 26th. Haying in progress on high lands. Sloughs still full of water. *Medicine Hat*—Weather conditions past month most favourable, crops, grass and cattle excellent. Outlook very encouraging. *Qu'Appelle*—Grain well advanced and prospects for heavy crop assured. Hay plentiful.

AUGUST.—*Regina*—Ideal harvest weather has prevailed throughout all districts with the exception of one or two local hail storms which did some damage. Harvest commenced about 17th, and was general a week later. Wheat in this district now about completed. Yield all over will be heavy. Some damage by frost south-east of here. *Calgary*—August

weather has been for the most part warm and very favourable for crops, and although the harvest is a little late it is excellent and promises a good yield. Barley cutting is finished and oats and wheat are rapidly progressing and will nearly all be ready by the end of the week. Haying is almost over and is the largest and best crop for years. Prairie grass is curing rapidly, and if the prairie fires are kept down winter fodder for the ranch stock is assured. Cattle are in excellent condition and are now fit for export. *Battleford*—August was exceptionally fine and dry and, therefore, favourable to crops. Very heavy yield expected. A light frost on 23rd did very little damage and only touched garden stuff. Hay plentiful. *Prince Albert*—Slight frost on 23rd but no damage. Weather most favourable for crops. *Edmonton*—Crops safe. Harvesting general. Yield heaviest on record. *Swift Current*—Fine month. Haying nearly done. Feed plentiful. Stock in splendid condition. *Medicine Hat*—August weather very suitable for harvest; dry without extreme heat. Heavy feed crops gathered in best condition. Cattle prime; export begun. *Qu'Appelle*—Harvesting general. Crops heavy. Weather favourable.

SEPTEMBER.—*Calgary*—Month opened with a very hot day, followed in the evening by the longest and brightest electric storm that has occurred for years. This was succeeded by a cold wet month very unfavourable for harvesting operations, which required about ten days more bright sunshine to properly ripen and secure the crop. Snow occurred on three or four days, very light near station but ranging from four to eight inches further west and north, but lighter than in many recent years. Light frosts occurred three or four times, ranging from freezing to four degrees till the night of the 30th, when ten degrees were registered. During the last week of the month a heavy fog prevailed, a very unusual occurrence in Alberta. The grain is mostly harvested in fair condition. The hay crop is unusually large and of superior quality. Cattle and horses are very fat, but the prairie grass is not curing as well as could be desired and fears are entertained that winter fodder for range stock will not be up to an average year. *Prince Albert*—Country roads bad. Crops turning out well but harvesting operations retarded by wet. *Medicine Hat*—Fine open weather during past month. All harvest and threshing work finished. Winter feed on prairie plentiful. *Edmonton*—Harvesting interfered with by bad weather. *Battleford*—This month has been very wet and unfavourable, with heavy snowfall. Little grain threshed yet. Yield good but some frozen. Much hay of best quality stacked, but also lots on ground wet. *Qu'Appelle*—Ground very wet. Much lying water. Trees nearly bare. Birds migrating rapidly. Harvesting and threshing at a standstill. Very little damage anticipated to grain by snow. *Swift Current*—Very cold and rainy month. Heavy snow storm on the 24th. *Regina*—Weather variable but not unfavourable to harvest up to 26th. Rain frequent. First winter frost about 15th. Heavy snow storm 23rd and 24th seriously interfering with threshing. Crop mostly in stook. Little damage to cut grain. Month closed with settled weather.

OCTOBER.—*Calgary*—October has had perhaps the pleasantest weather of the year: lots of bright sunshine, little wind and but little precipitation, the temperature during the days running up to 60 or 70 with light frosts at night. The weather has been admirable for saving late grain, and threshing is now in operation with crops turning out well. Although

wheat it a poor sample, oats are excellent. The prairie grass is better cured than for years, and this, with the large quantities of first class hay harvested ensures the stockmen against much loss this year. The rank dry grass is producing prairie fires, the great menace to stockmen at this season of the year. *Battleford*—Ice began running in the rivers on 31st. *Medicine Hat*—We have had the fine open weather of September maintained throughout October. All autumn work well advanced. Building operations continue brisk. Winter feed on prairie cured without frost, and abundant. The condition of all kinds of stock is excellent. *Prince Albert*—Weather has been perfect for threshing, which has been progressing rapidly. *Swift Current*—Very fine weather during the whole month. Good crop of vegetables. Grass well cured. Feed plentiful. Stock in splendid condition for the winter. *Qu'Appelle*—Grain all stacked. Threshing general. Birds, except geese and ducks, gone. *Moosomin*—Precipitation 1.06. Rain and snow on 8th, and rain on 13th. Some damage done to grain. Threshing slow on account of big crops. *Regina*—Precipitation 0.84. Rain and snow on 9th, rain on 11th and 29th; otherwise very fine.

NOVEMBER.—*Calgary*—The weather though cold at the beginning of the month has been very fine since, with bright days and sharp frosts at night. Chinook winds and clouds have prevailed and very little snow has fallen, which remained on the ground only for a day or so. The conditions have been grand for threshing and hauling grain, and the yield has in most cases been above the average. The range cattle have steadily improved and are now very fat. No feeding has been done as yet, the prairie grass being more abundant and of better quality than for some years. The dry grass has induced prairie fires, which in some places have proved destructive: both cattle and horses having been caught and burned to death. As reported last month, the season promises favourably for stock, as both hay and grass are abundant and of superior quality. *Prince Albert*—Cattle still feeding out. Roads bad for want of snow. *Battleford*—More snow west and north of here, but throughout this month the weather has been very favourable for threshing operations and ranchers. *Medicine Hat*—We have had unusually fine weather during November, with the exception of one or two days. An Indian summer has lasted throughout the month, shortening the winter and saving feed very materially. All kinds of stock are in good condition and shipments of fat cattle continue to be regularly made. *Swift Current*—No snow on ground on 30th. Low temperatures at commencement of month, but higher second week, and mild and bracing for the rest of the month. Small snow storms on three days; heaviest on 21st. Four inches of ice on creeks. *Regina*—Exceptionally fine month. No snow. Latter part very mild and summerlike. All busy threshing. No precipitation. *Chaplin* reports one inch of snow on 21st. *Didsbury* reports 2 inches of snow on the 5th. Slight snowfall on 20th and 21st. Snow gone on 22nd. Frost out of ground on 27th. Farmers harrowing on the 29th. *Qu'Appelle*—Roads excellent. Threshing well advanced. Stock in very good condition.

DECEMBER.—*Regina*—The weather throughout Assiniboia was moderate with slight snowfalls up to the 12th. 13th to 16th very cold. Subsequently mild with some very mild days. *Calgary*—December weather has been similar to that of the two preceding months, bright clear sunshiny days, with cool nights and light south-westerly chinook

winds that make Alberta's fall so pleasant and agreeable. Although snow fell on two or three days of the month it soon passed away under the influence of the chinook and sunshine. No cold weather or big storms have marred the perfect weather of the month. Cattle on the range are still sleek and fat; no fodder has yet been used. Threshing operations are completed and the roads are in first class shape for hauling. The mercury rose to 60 in the shade on Sunday, 29th. *Medicine Hat*—With the exception of a very few days the weather during December has been mild and genial, with light southerly and westerly winds prevailing. The snowfall has been light, and the uniformly fine weather has been unbroken by either blizzards or wind storms. Stock of all kinds are in good condition and able to stand hard weather during the next two months. *Prince Albert*—Weather unusually open, roads bad, interfering with wheat delivery and lumbering. *Battleford*—Very favourable weather for ranching. No sleighing. Prairie fires burning on 31st.

HAIL STORMS.

Special reports on the occurrence of hail storms are now being regularly received from all meteorological observers. As a matter of convenience the information furnished will be dealt with under districts as follows:

EASTERN ASSINIBOIA.—*Qu'Appelle Station*—In the district to the south about one thousand acres were damaged more or less. It is estimated that from 15,000 to 25,000 bushels were lost. The storms were numerous but went in streaks of no great width. Exact dates are not obtainable. *Alameda*—Slight damage was done in the vicinity of North Portal over a very small area on 20th July. Some crops in Township 1 Range 1 also sustained damage on a date not specified. *Weyburn*—On July 13th a hail storm completely ruined 200 acres of wheat on a strip of sections about ten or twelve miles long from east to west in the centres of Townships 17 Ranges 14 and 15. On August 26th another heavy hail storm occurred a short distance north-west. The wheat being all cut no damage was done to it, but 75 or 80 acres of oats were completely ruined. *Estevan*—The district east of Weyburn was practically free from hail except one local storm on July 16th when a settler in Township 1 Range 6 lost one-third of his crop and others sustained slight damage. *Indian Head*—The only damage reported was that sustained by two settlers in the *Abernethy* and *Saltoun* settlements, from a storm which occurred on the 24th and 25th August. *Regina*—A severe thunderstorm, accompanied by hail, occurred on the evening of the 11th of July. The stones were as large as good sized marbles, but the storm was purely local and did no damage except to garden stuff. On July 17th hail passed over Regina and district but no damage was reported. On the 27th of the same month some acres of crop were damaged on the farms of four settlers a few miles north of town and of two others to the south. Damage from hail was also reported at *Kronau*, where 500 acres were damaged in Township 15 Range 17. At *Kennell* a little hail fell but no damage was done. *St. Mary's* settlement was badly hailed on 27th July, and considerable damage was done on dates not stated at *Stony Beach*, *Marieton* and *Longlaketon*. Damage was also done on

dates not specified in Township 16 Range 16, and in Township 17 Range 22. *Muskowpetung's*—On August 5th a hail storm struck Muskowpetung's Reserve with a wind about 40 miles an hour. Hailstones very large. Storm lasted only 15 minutes and was not more than a quarter of a mile wide. Damaged grain at Piapot's. Passed south-east and did considerable damage at two farms. *Moose Jaw*—On July 7th hail damaged crops in Townships 15 Ranges 25 and 16 in Range 26. On July 8th another storm did heavy damage in Townships 16 Ranges 26 and 27. On July 11th harm was done in Townships 14, 15 and 16 in Range 26. On July 12th a very severe storm destroyed a large acreage belonging to 27 farmers in Township 17 Range 27, Townships 18 in Ranges 27 and 28 and Townships 19 in Ranges 26 and 27. On August 4th another storm damaged 19 crops in Townships 16 Ranges 26, 27 and 28. *Grenfell*—A few crops were hailed in the vicinity of Moffatt in June, but recovered. *Crescent Lake*—On June 28th considerable hail fell but no damage was done to crops. On 26th August a cyclonic storm occurred passing south-east through Yorkton doing great damage to property, which, however, was not observed. At *Ebenezer*, 12 miles north of Yorkton, a heavy hail storm occurred at the latter point which completely destroyed a large portion of the standing crop and also much of that which was stooked. At *Salteoats* there were no evidences of the storm at all. Hail also fell in the vicinity of *Cut Arm* and *Clumber* during August, but no damage was reported.

WESTERN ASSINIBOIA.—*Swift Current*—There was a slight hail storm on June 16th which did no damage, and a severe hail storm in the vicinity of *Gull Lake* which injured garden stuff. *Medicine Hat*—No hail storms recorded here. One passed about a mile to the north of *Stair* moving in an easterly direction on July 26th. It was described as very violent with high wind, but did not strike grain. The storm did not reach Many Island Lake which appeared to be in its track. No hail storms reported from the *Cypress Hills* district. In the first week of July a tremendous hail storm passed *Many Berries*, moving south. The same storm was also reported from *Milk River*. No damage was done. A hail storm was also reported from the *Red Deer River* district which destroyed garden truck in Township 23, Range 2 and cut grass and shrubs to the ground for a space of about a mile. *Crane Lake*—A heavy hail storm came from the north-west on 2nd July and damaged slightly all crops on Bear Creek. The storm did not extend east of a line crossing the railway about two and a half miles west of this point. On 9th August a hail storm, which was general in the district, came from the north-west and badly damaged crops. Small animals and birds were killed.

SOUTHERN ALBERTA.—*Calgary*—A hail storm on 5th August did damage north of the Bow River, in some cases completely destroying crops. On the 1st September a hail storm occurred south of the Bow between Calgary and Fish Creek. The damage by this storm was not so serious, from 3 to 10 bushels of grain per acre being the loss. One Crop was damaged in the High River district. Threshers report about 200 acres damaged near *Stirling* and a bad storm in August near *Leavitt* in Township 2 Range 26 and Township 3 Range 27, and about 20 acres destroyed near *Cardston*. Considerable damage was done in the town of *Macleod* on August 8th. Windows in town were broken and gardens and grain fields in the vicinity were damaged. The centre of the storm.

followed the course of the river as three miles out of town no hail seemed to have fallen.

NORTHERN ALBERTA.—*Knee Hill*—A hail storm from two to four miles wide passed north-west of here in August, but the district through which it passed being sparsely settled, practically no damage was done by it until it reached Horse Shoe Lake, where it cut all crops down. Another storm occurred to the south about the same time, passing through an uncultivated country. *Didsbury*—A little hail fell five miles west of *Carstairs* and west of *Olds* in Township 32 Range 3. Threshers state that 60 acres of oats were destroyed near *Olds* and that the yield near *Didsbury* was reduced considerably by hail storms. *Innisfail*—The only hail storm in this district occurred on the 5th August. It began across the Little Red Deer River and passed over half of *Little Red Deer* and *Bowden* districts. At *Eagle Creek* it seemed to split in two, one branch going south and the other south-east. It cut down everything in its course, crops and gardens, and even beat the prairie grass into the ground. After the storm the fields looked as if they had been mown and raked. At *Penhold* some damage was done a short distance north-east. *Beaver Hills*—On the 16th July a severe hail storm occurred over a strip of country to the south-east of *Bruderheim* completely destroying a considerable acreage. On the following day some damage was done over a small area to the north-east of *Fort Saskatchewan*. On August 8th a storm occurred within a small area north-east of *Beaver Hills* post office. *Red Deer*—No damage was done in this district by hail storms with the exception of one locality a few miles south-east of *Lacombe*. The storm which occurred on September 1st was of a very local nature. Hail also fell at this station on the 8th, 9th and 27th August, but no damage was done. Threshers report that four or five men lost all their crop and others from ten to fifteen acres. Some little damage was done by hail at points east of Battle River and north of the Pipestone about the middle of August.

STRATHCONA and EDMONTON.—On July 10th a remarkable hail storm occurred, extending over a strip of country about two miles wide, from about three miles east of *Edmonton* to *Stony Plain*. Great damage to property was done in the town of *Strathcona*. The hail stones were very large, some measuring 10 inches in circumference, weighing five ounces. The stones were fairly regular in shape and in form something like a tomato, having a considerable depression in the centre of one side. The opposite side was usually full and the whole had the appearance of a large number of small stones frozen together about a nucleus. Many persons who happened to be caught in the storm received severe bruises. The storm commenced about five o'clock p.m. with rain and small hail increasing in severity till about half past five or six when it passed over, the sun shining again as brightly as ever. On the 16th of the same month another storm took place over a strip of country extending south-east from *Edmonton*. More damage was done, however, by the heavy rain which accompanied the hail than by the hail itself. Another storm occurred in the vicinity of Cooking Lake on the 18th of the same month. Several storms occurred in the *Turnip Lake* country throughout the summer but no particular damage is reported.

SASKATCHEWAN.—*Melfort*—A hail storm, about a mile wide, occurred on the night of the 18th July travelling north-east. Grain was not much hurt. *Saskatoon*.—On the 21st June a hail storm occurred which was

thought at the time to have done considerable damage in the north-west of Township 36 Range 6 and in the south-east of Township 36 Range 5. The grain, however, recovered and the damage was not of any account. *Battleford*—The only hail storm that visited this point occurred on July 10th. It travelled from the south-east to the north-east touching *Bresaylor*, 30 miles west of here, where only about half an acre of grain was damaged. A severe hail storm is reported as having visited *Union Lake* on July 15th, which broke windows and damaged gardens. Damage is also reported by threshers in the *Clover Bar* and *St. Albert* districts, at the latter point in August. The remaining meteorological stations report that no hail occurred in their respective districts during the year just passed.

L.—ANNUAL Precipitation from 1891 to 1901, inclusive.

STATION.	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	Average
Prince Albert.			10.27	9.30	14.14	19.64	19.47	15.74	29.88	22.40	18.12	17.66
Battleford		11.06	10.93	13.47	12.01	12.93	16.53	14.25	18.42	20.41	16.57	14.65
Edmonton	17.90	16.85	18.07	16.13	14.68	15.24	14.55	10.91	20.89	27.81	27.41	18.22
Calgary	10.44	7.91	11.05	11.91	15.31	14.64	21.04	16.76	27.04	17.51	25.39	16.27
Macleod						12.73	12.77	13.58	19.74	10.08	12.93	13.63
Medicine Hat	13.15	12.22	16.60	11.52	14.13	18.18	17.27	15.90	24.12	22.05		16.51
Swift Current	24.55	20.25	13.87	9.66	12.29	14.11	16.24	15.25	19.38	14.49	17.64	16.15
Chaplin			2.91	4.39	5.58	9.66	6.56	6.40	5.90	4.77	4.42	5.62
Regina						18.90	9.32	13.28	14.89	12.33	22.31	15.17
Qu'Appelle Stn.	19.02	16.49	16.35	12.52	15.29	22.10	12.56	21.65	19.27	16.52	27.91	19.79
Indian Head							16.15	20.63	14.33	15.36	23.01	17.89
Manor						20.44	10.85	26.63	18.60	22.88	20.88	20.04

II.—MONTHLY PRECIPITATION.—1901.

STATION	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	TOTAL
Alameda.....				0.64	0.17	6.44	2.45	1.03	3.19	0.36	0.00		.....
Battleford.....	0.85	0.26	1.15	0.36	2.42	4.45	1.96	0.91	2.73	0.68	0.23	0.57	11.52
Banff.....	0.88	0.80	1.35	1.57	2.39	4.00	2.84	0.82	2.05	0.33	1.30	0.92	69.75
Beaver Hills.....	0.40	0.54	0.14	2.59	1.59	3.39	13.76	0.48			1.05	0.83	.....
Chaplin.....	0.70	0.20	0.05	0.37	0.16	0.63	0.43	0.00	1.08	0.10	0.10	0.60	4.42
Calgary.....	0.40	1.02	1.15	0.90	1.91	7.00	3.90	0.71	2.95	0.12	0.40	1.85	22.31
Calgary (Exp Sta'n)	0.32	0.79	1.20	0.79	1.86	6.02	5.71	0.33	2.72	0.12	0.52	1.15	21.53
Crane Lake.....	1.25	0.68	0.31	0.72	3.12	2.71	3.04	2.16	2.98	0.23	0.67	0.58	18.45
Crescent Lake.....	1.33	0.27	0.55	2.51	0.40	6.11			4.69	0.68	0.39	1.01	.....
Coutts.....	1.65	1.15	0.55	0.20	4.38	2.58			1.96		0.05	1.08	.....
Dirt Hills.....			0.35	3.05	1.19	5.93	4.75		2.75	0.72	0.30		.....
Didsbury.....	0.22	1.30	0.80	0.85	1.51	7.52	3.83	1.34		0.00	0.30	1.25	.....
Estevan.....									1.63	0.26	0.10	0.65	.....
Edmonton.....	0.46	1.50	0.66	1.11	2.02	3.00	11.10	0.72	4.23	0.47	1.10	1.04	27.41
Gatesgarth.....			0.99		0.97	6.47	6.13	0.34	2.99	0.57	0.03		.....
Grenfell.....	1.70	0.30	0.20				4.13					0.30	.....
Indian Head.....	1.50	0.35	0.20	1.71	0.87	5.63		0.00	4.90	1.58	0.00	0.50	.....
Innisfail.....	0.30	0.75	0.66	1.22	1.49	8.87	6.31	0.73	3.20	R	0.35	0.83	24.71
Knee Hill.....				0.15	1.29	6.64				0.26	0.29	0.54	.....
Manor.....	1.10	0.80	1.20	0.78	0.27	5.51	4.45		4.17	0.38	0.11		.....
Macleod.....	0.26	0.58	0.35	0.80	2.06	4.31	1.24	0.43	1.91	0.04	0.45	0.50	12.93
Medicine Hat.....	1.68	1.40		0.11	6.29	4.01			2.41	0.45	0.55	0.30	.....
Moose Jaw.....			0.04	0.18	1.78	2.79		0.39	2.85	0.52	R		.....
Moosomin.....	1.22	0.10	0.40	2.08	0.42	6.16	1.44	1.95	3.48	1.06	0.05	0.48	18.84
Muskowpetung.....	1.00	0.30	0.91	1.83	0.83	4.80	4.04	1.35					.....
N. E. Beaver Hills.....	0.38	0.58	0.33	0.75	1.94	4.47	9.12	1.20	5.17		0.20	0.77	.....
Pincher Creek.....		1.04			2.01	5.88	1.81	0.58	2.45	0.00	0.45	0.18	.....
Prince Albert.....	0.33	1.03		0.48	1.49	3.72	4.49	1.49	2.81	0.10	0.78	0.34	.....
Qu'Appelle.....	2.28	1.59	0.91	5.03	0.81	4.83	5.47	0.77	4.17	0.37	0.17	1.51	27.92
Red Deer.....	0.33	0.95	0.80	0.77	1.95	8.13	8.63	1.66	3.41	1.31	0.33	0.85	29.11
Regina.....	0.40	0.23	0.53	1.08	0.65	4.85	8.25	R	2.27	0.50	R	0.21	18.97
Regina (2).....	1.45	0.00	0.30	1.98	0.49	4.78	7.56	0.92	3.40	0.84	R	0.40	22.12
Saskatoon.....	0.33				1.49	3.16	3.10	0.57	3.79	0.84	0.12	0.30	.....
Saltcoats.....	1.60	1.30	0.55	1.31	0.65	4.37	3.08	0.60	1.40	0.05	0.15	0.40	15.46
Swift Current.....	1.32	0.50	0.30	0.42	1.99		4.29	0.56	3.84	0.46	0.22	0.50	.....
Stirling.....		0.40	0.50	1.10	1.85	5.30	0.36	0.93				0.40	.....
Weyburn.....	1.80	0.81	0.66	2.28	0.53	5.70	3.82	4.01	3.29	0.35	0.55	1.60	25.40

III.—TEMPERATURE, 1901.

STATION.	JANUARY				FEBRUARY				MARCH				APRIL				MAY				JUNE			
	Mean	Max	Min	Date of Min	Mean	Max	Min	Date of Min	Mean	Max	Min	Date of Min	Mean	Max	Min	Date of Min	Mean	Max	Min	Date of Min	Mean	Max	Min	Date of Min
Alameda...	-1.0	30.0	-37.0	4	4.1	48.0	-24.0	5	18.8	43.0	-18.0	20	39.1	87.0	10.0	17	57.7	95.0	18.9	12	57.4	84.5	31.0	7
Battleford...	14.3	38.0	-21.0	3	16.4	45.0	-25.3	22	28.0	49.5	-13.0	4	3.85	75.0	6.0	5	58.9	88.0	26.0	11	55.6	77.0	34.0	6
Beaumont...	14.3	37.0	-32.0	8	4.8	42.0	-25.0	24	24.0	47.5	-19.2	4	34.0	61.0	4.1	4	47.5	79.4	21.3	10	47.1	74.1	30.0	4
Calgary...	-0.1	45.0	-35.0	5	15.6	37.0	-18.0	5	30.4	55.0	-10.0	4	38.7	72.0	13.0	16	61.7	92.0	30.0	3	53.0	80.0	35.0	26
Calgary Exp. Stn	13.2	49.9	-34.9	5	16.1	53.9	-21.9	5	30.9	55.9	-16.4	4	37.2	70.1	10.2	16	50.8	84.1	19.2	10	49.0	77.0	32.0	7
Crane Lake...	12.7	43.0	-28.0	8	13.0	53.0	-17.0	5	32.0	60.0	-9.0	4	42.4	73.0	15.0	4	57.4	90.0	25.0	11	53.8	77.0	30.0	6
Crane Lake	7.4	30.0	-41.0	2	1.9	36.0	-29.0	4	13.9	37.0	-20.0	4	37.8	65.0	8.0	5	57.4	94.0	22.0	12	54.7	79.0	29.0	7
Crecent Lake																								
Edmonton...	-6.4	25.0	-34.0	31	14.9	56.0	-27.0	19	32.9	57.0	-9.0	4	39.8	69.0	10.0	4	54.8	87.0	30.0	10	53.1	86.0	34.0	4
Gatesgarth...	13.0	45.0	-29.0	4	2.9	36.0	-29.0	3	19.4	38.0	-20.0	4	38.4	75.0	12.0	18	58.0	94.0	23.0	11	56.4	80.0	33.0	9
Grenfell...	3.9	38.0	-34.0	2	3.3	42.0	-28.0	4	20.4	43.0	-30.0	4	58.0	94.0	26.0	12	58.0	94.0	26.0	12	56.2	80.0	31.0	7
Indian Head...	4.1	35.0	-35.1	1	0.6	40.0	-29.0	4	18.0	42.0	-30.0	4	38.5	79.0	-9.0	17	56.2	80.0	31.0	12	56.2	80.0	31.0	7
Knee Hill...	12.1	52.7	-40.0	8	3.0	36.0	-28.0	4	16.0	38.0	-28.0	1	36.5	65.0	8.5	18	56.0	82.0	24.0	12	56.4	80.0	29.0	6
Manor...	1.8	40.0	-37.0	1	17.5	58.0	-25.0	5	33.8	61.0	-15.0	4	41.1	75.0	15.0	8	55.2	83.6	27.0	14	55.0	79.0	31.0	6
Medicine Hat...	19.0	41.0	-30.0	5	15.5	50.0	-25.0	11	22.0	45.0	-13.0	4	40.3	78.0	8.0	16	53.7	83.6	27.0	14	55.0	79.0	31.0	6
Moose Jaw...	2.5	38.0	-35.0	9	1.8	42.0	-29.0	3	16.2	39.0	-20.0	4	37.8	78.0	8.0	16	57.1	92.0	30.0	3	55.8	84.0	33.0	6
Moosomin...	1.5	37.0	-47.5	1	0.5	41.5	-32.0	4	19.2	45.0	-30.0	4	36.9	73.0	3.0	17	55.8	97.1	26.0	11	55.8	84.0	33.0	6
Muskowkeung...	18.7	59.0	-30.0	5	18.7	59.0	-30.0	4	32.4	59.0	-20.0	4	38.7	73.0	13.0	1	57.1	90.0	21.0	12	55.8	84.0	33.0	6
Pincher Creek...	22.2	59.0	-46.5	1	3.4	52.0	-26.4	5	9.8	39.4	-18.6	4	38.0	79.0	3.0	5	57.7	88.5	14.0	10	49.1	76.0	30.0	7
Prince Albert...	4.2	35.0	-33.0	1	3.0	38.7	-27.2	4	29.4	50.7	-16.8	4	37.6	78.2	4.6	17	53.3	87.5	27.5	11	53.8	79.0	31.5	6
Qu'Appelle...	2.0	45.7	-42.0	1	15.6	56.3	-16.5	11	17.4	35.6	-30.0	4	37.8	68.0	11.2	5	52.3	87.3	25.0	6	53.8	76.8	30.8	6
Red Deer...	17.3	45.7	-42.0	2	0.2	36.0	-29.0	5	17.4	35.6	-30.0	4	36.3	68.0	7.0	16	58.8	92.0	26.0	12	56.5	80.0	32.5	9
Regina...	-0.6	36.0	-42.0	2	9.4	41.0	-18.0	5	28.2	50.0	-12.0	4	43.5	63.0	17.0	16	57.7	88.2	28.0	12	55.1	76.5	30.0	6
Saskatoon...	1.0	38.0	-35.0	2	9.4	41.0	-18.0	5	28.2	50.0	-12.0	4	43.5	63.0	17.0	16	57.7	91.0	23.0	11	55.1	76.5	30.0	6
Swift Current...	9.3	42.0	-29.0	3	9.4	41.0	-18.0	5	28.2	50.0	-12.0	4	43.5	63.0	17.0	16	57.7	91.0	23.0	11	55.1	76.5	30.0	6

III.—TEMPERATURE, 1901.—Continued.

STATION.	JULY				AUGUST.				SEPTEMBER				OCTOBER				NOVEMBER				DECEMBER			
	Mean		Date of Min		Mean		Date of Min		Mean		Date of Min		Mean		Date of Min		Mean		Date of Min		Mean		Date of Min	
	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min
Alameda	66.7	90.0	40.0	1	62.8	94.5	32.5	6	47.5	94.0	20.0	17	44.5	77.5	14.5	31	22.2	57.0	2.5	3	14.6	48.0	31.0	14
Battleford	63.6	87.0	30.0	2	63.2	88.0	28.0	23	46.6	82.0	22.0	28	43.7	74.0	13.0	15	20.7	43.0	7.0	24	23.6	49.3	40.0	11
Beaumont	55.5	79.0	32.1	15	56.6	83.0	32.0	18	42.9	72.4	19.4	29	43.7	64.7	22.1	15	28.7	47.0	5.0	3	14.4	42.0	33.0	13
Chaplin	67.8	95.0	37.0	2	65.3	92.0	37.0	23	45.8	80.0	25.0	23	45.7	72.0	18.0	15	23.6	52.0	2.8	2	26.3	60.3	3.6	13
Chapman	58.9	80.0	37.0	1	59.3	85.0	35.0	18	45.3	75.0	23.0	29	47.9	74.0	18.0	15	23.4	52.0	6.0	2	25.4	57.3	3.6	13
Calgary	58.9	80.0	37.0	1	59.3	85.0	35.0	18	45.3	75.0	23.0	29	47.9	74.0	18.0	15	23.4	52.0	6.0	2	25.4	57.3	3.6	13
Calgary (Exp. Sm.)	56.7	83.9	31.5	1	58.1	87.4	32.0	18	44.0	78.4	20.0	17	46.8	74.0	17.0	15	21.4	42.0	2.0	3	21.3	49.0	24.0	13
Crane Lake	66.8	94.0	42.0	1	65.7	92.0	41.0	7	48.5	81.0	23.0	19	43.7	74.0	18.0	15	21.4	42.0	2.0	24	7.7	39.0	49.0	13
Crescent Lake																					13.3	57.0	31.0	13
Estevan																					23.1	50.0	24.0	14
Edmonton	69.9	83.0	42.0	17	61.4	85.0	38.0	7	46.0	81.0	23.0	18	43.7	74.0	18.0	15	21.4	42.0	2.0	9	11.1	38.0	36.0	14
Gadsden	66.1	90.0	42.0	3	63.0	95.0	35.0	7	46.1	77.0	26.0	19	47.2	74.0	18.0	15	21.4	42.0	2.0	4				
Gardiner	66.4	89.0	48.0	30																				
Grenfell																								
Indian Head																								
Kneass Hill																								
Manor	65.8	90.0	39.0	1																				
Macleod	63.8	94.0	38.0	15	64.4	94.0	40.0	6	46.2	89.0	22.0	28	43.7	74.0	18.0	15	21.4	42.0	2.0	11	23.8	55.0	4.0	16
Medicine Hat																					27.3	54.8	13.0	13
Moosomin																					12.4	41.0	31.0	14
Moose Jaw																					9.8	36.0	33.0	12
Muskeg	65.1	86.0	42.0	1	59.2	86.0	38.0	22	45.9	86.0	23.0	17	42.4	75.0	16.0	29	19.0	51.0	6.0	3				
Muskowpetung	65.6	98.0	38.0	2	62.3	93.0	39.0	22	46.3	77.0	28.0	17	50.3	73.0	24.0	15	35.0	57.0	8.0	1	30.0	58.0	4.0	14
Pincher Creek	59.7	86.0	37.0	15	62.5	93.0	39.0	23	46.2	90.0	26.5	23	43.8	73.0	16.5	31	16.3	39.5	7.5	4	10.3	52.0	34.5	14
Prince Albert	63.1	86.0	44.0	2	62.7	93.8	39.0	23	46.2	90.0	26.5	23	43.8	73.0	16.5	31	16.3	39.5	7.5	4	11.9	42.3	34.4	13
Qu'Appelle	66.2	89.6	44.6	2	63.3	93.0	38.6	27	46.5	79.3	26.7	23	48.5	72.8	13.3	31	29.0	53.1	2.9	3	26.4	57.0	47.0	13
Red Deer	58.5	87.8	42.0	1	55.5	79.2	41.2	23	43.7	70.7	23.6	23	48.5	72.8	13.3	31	29.0	53.1	2.9	3	12.8	42.9	37.0	14
Regina	63.6	91.0	41.0	30	61.7	92.0	35.0	7	47.1	86.5	18.0	26	43.3	71.0	14.5	31	20.2	48.9	7.5	4	12.6	46.9	33.0	14
Saskatoon	63.6	87.8	41.0	2	61.7	93.0	36.0	23	45.6	83.0	23.0	19	43.3	71.0	14.5	31	20.2	48.9	7.5	4	19.5	44.0	27.0	13
Swift Current	61.5	92.0	43.0	29	66.7	91.0	38.0	7	46.8	83.0	24.0	25	48.3	72.0	17.0	31	29.2	60.0	4.0	3				

IV.—LATITUDE, Longitude, and Elevation of Stations in the North-West Territories.

STATION	LAT. N.		LONG. W.		ELEVATION ABOVE SEA LEVEL	STATION	LAT. N.		LONG. W.		ELEVATION ABOVE SEA LEVEL
	Deg	Min	Deg	Min			Deg	Min	Deg	Min	
Alameda.....	49	15	102	17	1,892	Macleod.....	49	44	113	24	.....
Battleford.....	52	41	108	20	1,620	Medicine Hat..	50	1	110	37	2,161
Calgary.....	51	2	114	2	3,389	Melfort.....	52	47	104	30	.....
Crane Lake.....	50	0	109	50	2,516	Moose Jaw ..	50	21	105	35	1,745
Chaplin.....	50	27	106	40	2,202	Moosomin.....	50	0	101	37	1,884
Didsbury.....	51	39	114	08	3,300	Muskowpetung	50	55	104	30	.....
Edmonton.....	53	33	113	30	2,158	Pincher Creek	49	11	114	0	3,750
Estevan.....	49	12	103	04	1,858	Prince Albert..	53	10	106	0	1,432
Gatesgarth.....	50	20	105	0	1,879	Qu'Appelle....	50	30	103	47	2,115
Grenfell.....	50	23	102	53	1,957	Red Deer.....	52	15	113	30	2,795
Indian Head...	50	28	103	40	1,924	Regina.....	50	27	104	37	1,885
Innisfail.....	52	02	113	57	3,087	Saskatoon.....	52	15	106	30	1,571
Kneehill.....	51	55	103	0	.....	Swift Current.	50	20	107	45	2,439

V.—MEAN Temperature, Mean Precipitation and Crop Yields, 1898-1901

DISTRICT	MEAN TEMPERATURE				MEAN PRECIPITATION				YIELD PER ACRE		
									Wheat	Oats	Barley
	Sept-Oct	Nov-Mar	Apr-June	July-Aug	Sept-Oct	Nov-Mar	Apr-June	July-Aug			
1.	51.4 1899 41.9 1900 44.5 1901 47.4	7.58 4.63 10.33 8.20	48.0 47.3 55.6 50.3	61.6 62.4 63.2 63.6	0.55 3.03 1.81 2.61	0.69 1.00 0.55 0.98	1.70 2.63 0.51 2.48	2.61 1.48 2.91 2.95	15.93 15.73 19.22 19.52	19.63 30.50 23.64 38.90	24.16 20.25 23.64 35.33
2. ....	.....	.....	52.0	63.4	.....	.....	2.53	1.45	22.00	40.74	14.94
3.	50.5 1898 43.1 1899 1900 47.2 1901	7.74 4.14 8.25 9.38	48.1 54.7 51.2	62.6 62.9 63.5	0.52 0.77 3.06	0.30 0.57 0.72	1.20 0.40 3.25	3.33 4.55 2.34	16.00 16.49 7.91 21.10	27.99 26.28 9.32 34.52	22.99 20.35 9.96 29.15
4.	50.2 1898 43.5 1899 44.6 1900 47.2 1901	7.77 4.05 11.50 9.36	49.4 45.6 55.2 51.5	63.4 62.5 63.4 64.4	0.41 2.36 1.55 1.95	0.74 2.43 0.69 0.96	1.94 2.65 0.74 2.93	3.29 1.02 2.68 3.15	18.17 18.75 7.65 29.54	26.05 29.86 14.70 44.55	19.59 23.15 15.11 33.51
5.	50.6 1898 44.0 1899 44.8 1900 45.7 1901	7.97 4.19 14.00 9.80	50.5 45.5 55.9 47.8	63.5 62.2 63.8 64.6	0.56 1.22 0.98 1.74	0.62 2.38 0.68 0.61	1.16 2.77 0.81 2.41	2.46 1.30 2.20 3.01	20.99 26.65 11.81 28.73	24.05 35.19 15.45 51.95	18.99 21.33 10.03 41.25
6.	51.5 1898 47.2 1899 49.4 1900 47.9 1901	15.9 11.6 22.1 19.9	51.1 48.3 57.6 51.9	67.7 63.3 64.7 66.4	1.72 1.25 1.01 1.65	1.24 0.80 0.55 0.95	1.31 2.10 1.44 2.42	2.32 4.27 3.22 2.26	17.85 36.85 32.20 29.54	44.00 50.82 28.82 47.91	36.90 44.76 9.38 40.67
8. ....	.....	.....	.....	NO DATA	.....	.....	.....	.....	.....	.....	.....
9.	47.1 1898 47.0 1899 44.2 1900 45.4 1901	6.44 1.77 9.52 6.69	47.1 44.1 53.1 52.6	62.2 59.4 61.2 62.3	1.76 1.71 2.08 1.57	1.52 0.81 0.75 0.80	1.22 2.39 3.79 2.41	1.85 5.24 3.79 2.41	17.65 15.27 17.02 21.85	18.69 29.10 27.86 39.64	22.00 21.10 22.73 32.00

V.—MEAN Temperature, Mean Precipitation and Crop Yields, 1898-1901.—Continued.

DISTRICT	MEAN TEMPERATURE				MEAN PRECIPITATION				YIELD PER ACRE			
	Sept-Oct	Nov-Mar	Apr-June	July-Aug	Sept-Oct	Nov-Mar	Apr-June	July-Aug	Wheat	Oats	Barley	
10.....	1898.....	48.3	5.64	49.4	63.9	1.23	0.81	2.09	1.33	20.33	22.00	30.66
	1899.....	44.4	4.04	46.3	61.7	0.64	0.43	2.23	3.26	17.08	22.50	27.53
	1900.....	45.3	10.90	54.3	61.7	1.33	0.58	2.23	4.72	20.62	24.58	34.22
	1901.....	46.0	10.10	50.7	63.4	1.06	0.55	2.41	2.01	34.00	36.30	51.10
11.....	1898.....				NO DATA							
	1899.....											
	1900.....											
	1901.....											
12.....	1898.....	48.8	14.9	51.3	62.9	0.62	0.89	1.01	1.42	26.10	31.02	46.53
	1899.....	44.1	13.2	46.9	58.7	0.94	0.49	2.30	4.39	25.02	26.46	42.87
	1900.....	40.7	18.1	53.8	57.7	1.11	0.97	3.03	4.04	18.78	24.22	32.15
	1901.....	44.3	21.1	49.2	61.1	2.16	0.81	2.04	0.91	25.97	52.55	67.49
13.....	1898.....	48.8	14.9	51.3	62.9					22.25	28.75	41.25
	1899.....	44.1	10.6	45.8	57.8		1.01	2.75	8.00	19.05	31.08	42.96
	1900.....	45.6	19.8	52.6	56.9	1.58	0.54	3.11	3.66	18.55	27.20	37.11
	1901.....	43.7	22.0	48.0	60.1	2.59	0.54	3.74	4.33	21.90	25.75	41.52
14.....	1898.....	45.8	14.1	47.7	62.2	1.27	0.83	0.90	2.63	26.00	34.83	46.50
	1899.....	44.4	11.9	44.0	57.7	0.75	0.67	2.31	6.53	17.70	23.53	44.42
	1900.....	44.7	21.9	50.6	56.7	1.72	0.50	2.99	2.74	18.01	23.70	37.06
	1901.....	42.8	26.6	47.2	59.1	2.43	0.62	3.28	3.05	11.70	20.87	28.35
15.....	1898.....	47.2	16.8	47.8	62.2	1.03	1.09	1.86	2.63	21.48	35.90	39.66
	1899.....	44.6	14.0	43.9	57.3	0.48	0.67	2.78	5.55	21.31	27.69	41.09
	1900.....	45.2	23.9	51.3	57.6	1.27	0.40	2.15	1.96	21.96	31.66	43.11
	1901.....	47.9	23.1	47.2	59.1	2.47	0.80	3.28	2.44	23.97	30.67	43.78
16.....	1898.....	52.4	20.1	51.8	68.8	1.16	1.03	1.19	2.57	26.79	31.58	43.22
	1899.....	48.7	16.0	48.7	63.0	1.05	0.86	2.14	3.75	17.89	23.17	37.15
	1900.....	52.6	24.6	58.1	62.1	1.69	0.67	1.13	2.46	22.65	22.44	35.95
	1901.....	47.2	25.1	4.96	64.9	1.96	0.98	3.18	1.01	25.14	25.94	40.42

N.B.—The yields for 1901 are estimates.

CROP STATISTICS.

So far as the Territories are concerned the compilation of agricultural statistics is at present necessarily limited to the crops of wheat, oats and barley. In previous reports of this Department attempts have been made to show, in a very general way, the important relations which reliable agricultural statistics bear to practical agriculture and stress has been laid on the fact that an intelligent study of statistical information, consistently and persistently (for these conditions are essential to success) carried out, may bring forth tangible advantages in the way of dollars and cents to the farmer. It is an universally accepted axiom in economics that an unascertainable supply creates instability of markets. The middleman is compelled to purchase at safe prices which invariably results in reduced prices to the producer. While the usefulness of statistical information with regard to crops, in years when crop conditions are normal, must, therefore, be apparent to the most superficial student of economics, the advent of a harvest such as that just experienced in the Territories produces conditions which, whether considered collectively or independently, are amply sufficient to show the existence of a crying necessity, which must be fully and immediately met by some organisation which has the necessary machinery to handle such statistical work and at the same time is above the suspicion of being influenced by considerations of commercial self interest. Such an organisation manifestly can only exist in a department of the public service. The only factors hitherto lacking to enable this Department to deal satisfactorily with the question being the means and some of the machinery. As indicated in last year's report, this necessity was apparent soon after the organisation of the Department and arrangements are now being made, under your directions, for the necessary extension of the statistical work and the organisation of a crop reporting service sufficient for present requirements.

While on the subject it might be well to draw attention to the important relation that exists between agricultural statistics and colonisation. The Department is continually in receipt of letters from Great Britain, the Eastern Provinces, the United States and other countries asking for just such information as is given in the statistical portions of this report. The following extract from a letter received in the Department from Mr. W. R. Preston, Commissioner of Immigration for Great Britain, speaks for itself:

I am much obliged for your letter of the 10th instant (file 307) transmitting the details of a final estimate of the results of the past season's crops in the North-West Territories. These have been embodied in a news paragraph and circulated among the press of this country, and I have no doubt it will be read with all the interest that is usually given to the subject of the growth and prosperity of our western country. I am always extremely glad to get information of this character as we can make such good use of it on this side, and I hope that you will continue to help us in this direction.

Statistics, while not yet classed with what are known as the "exact sciences," has in recent years approached somewhat to that dignity. The sum of human knowledge is being continuously added to by patient and careful investigations in this as in other directions, besides which there appears to be a growing tendency on the part of the intelligent public to be critical of statistical methods and cautious in drawing inferences from statistical compilations. Unfortunately much disrepute has been brought on statistical work of all kinds through statements made by men popu-

larly supposed to be "in the know," and given publicity to by the public press, based on utterly insufficient information, or possibly inspired by interested motives. There can be no doubt that such "estimates" have often had an appreciable effect on prices, generally to the detriment of the producer and the profit of the middleman.

It has been said that anything can be proven by statistics. The fact is, however, that the mere adding of figures together—the mere statement that two and two make four—does not constitute statistics. Few tables, if any, can be compiled or made use of intelligently without taking many circumstances, which have a more or less direct relation to the figures, into account. In any statistical tables prepared and published by this Department, therefore, an endeavour is always made to state the co-ordinating circumstances in such a way as to be convenient for reference when studying them. It will be interesting to consider briefly the methods adopted in various countries and in the provinces of the Dominion for the collection of crop statistics and to compare them with the system inaugurated in the Territories.

In England and Scotland information is gathered by the Inland Revenue officials. It is objected, and with some show of reason, that these officials, who are unpopular as a class, are not likely to obtain the true facts in each case. On the other hand, the fact that the information is collected by actual enquiry of each individual farmer must be considered as a point in favour of a system which is one obviously inapplicable to a country like this. The Board of Agriculture of Ireland gathers its information through the medium of the Royal Irish Constabulary. In Queensland, Australia, crop statistics are compiled from data collected by the police of the several wheat growing districts, and it is claimed that a considerable degree of accuracy is attained. In New Zealand the plan adopted is similar to that used in the United Kingdom. Estimates of produce are made after the results of threshing are known.

In British Columbia—agriculture proper being still in a somewhat primitive stage—the Legislature has not yet seen its way to make provision for the collection of statistics. Writing in the Annual Report of the Provincial Department of Agriculture for 1895-6, the Deputy Minister of Agriculture says :

It is to be regretted, for several reasons, that comprehensive statistics on many matters of vital importance cannot be included, but the expense incident to cover so large a field has been deemed a sufficient bar to their obtainment. As regards the utility of reliable statistics there can be no question in the minds of those who have given the question their consideration and who are best competent to form an opinion on such subjects. The many enquires reaching the Department from all quarters and from all classes of enquirers are proof of their value.

New Brunswick.—The system of gathering information is by issuing a circular of instructions and blank form, addressing one to each of the secretaries of school trustees in the province. The circular asks each secretary to get from each of the farmers in his district a statement of the number of acres and bushels grown and to return the form to the Department by December first. Though it is claimed for this system that it is one of the most accurate in use the Deputy Commissioner of Agriculture for the province admits, in his report for 1900, that of the 1,500 forms sent out only 800 returns were made. The system could not be satisfactorily worked in the Territories.

In Nova Scotia returns are made to the Provincial Department of Agriculture by officers of agricultural societies. Condition reports are

issued in July, the condition of each crop being represented as a percentage of the average condition at the same period in former years. Another report is issued showing percentage quality and yield.

In the Province of Ontario crop estimates and reports are based on information received from a staff of 2,000 correspondents who are usually county assessors; and in Manitoba the services of the clerks of municipalities, into which the province is divided, are utilised.

Probably the most complete system of crop reporting in the world is that in use in the United States, where the work is carried out under the auspices of the Division of Statistics of the Federal Department of Agriculture. The chief reliance for the ascertainment of conditions is placed upon three principal corps of correspondents, namely, county correspondents, township correspondents, and state statistical agents.

County Correspondents.

There are in the United States, approximately, 2,750 counties of agricultural importance. In each of these counties the Department has a principal county correspondent, who maintains an organisation of three assistants, each covering a specified territory. These county correspondents are selected with special reference to their qualifications for the service and constitute a most efficient branch of the crop reporting service. Facilities are furnished the principal correspondent to enable him to obtain regular reports from his assistants. These reports he tabulates at the end of the month, supplementing the information thus obtained by his own observation and knowledge of the situation, and the consolidated report is submitted to the statistician. Although there is no compensation attached to the position, an average of about 90 per cent. of them report monthly.

Township Correspondents.

The list of township correspondents comprises from 6 to 15 individual correspondents in each county. These are distributed geographically throughout the county, the number being dependent upon the size of the county and its importance in production. The correspondents on this list report directly to the statistician, the schedules for county and township correspondents being tabulated by clerks in Washington.

State Statistical Agents.

This list embraces a regularly appointed salaried state statistical agent in each of the 43 states, it being the duty of each to report upon agricultural conditions for his own state only. Each of these agents maintains a special list of correspondents over which he has entire control, completely covering the state and averaging, in total numbers, from 20 to 600 correspondents each, according to the size of the state and its agricultural importance. These state statistical agents report direct to the state agent. Schedules are carefully tabulated and weighted according to the relative importance of each county represented and the summarised report submitted to headquarters on the 7th of each month. From states west of the Mississippi River the reports of state agents are telegraphed in cipher.

Each of the three lists mentioned above is kept entirely separate and distinct, no one individual being allowed to serve upon any two of the lists.

The reports referred to above are brought together in convenient form on the 8th of each month and the statistician is thus provided with three separate estimates covering the same territory and the same crops, made by separate corps of correspondents, each reporting for a territory with which he is familiar, and from these results the statistician compiles his own estimates. The information thus obtained, however, is supplemented by the reports of salaried special field agents who systematically traverse the producing portions of the country procuring all possible data and carefully analysing the situation. Information with regard to final yield per acre is further obtained from reports received from a very large corps of individual producers, each reporting for his own farm only. The total number of all classes of correspondents in the crop reporting service aggregate nearly 250,000.

Even this elaborate system occasionally comes in for criticism and the formation of statistical bureaux of a semi private nature has been advocated. With reference to this movement The Orange Judd Farmer, which is undoubtedly the periodical that speaks with the greatest authority on matters of agricultural statistics on this continent, says: "Efforts in this direction would be worse than worthless because actually misleading. The building up and maintenance of crop bureaux, such as those carried on by the government, require years of persistent and earnest effort in order to secure anything like satisfactory results."

The first attempt to secure agricultural statistical information in the Territories was apparently made in 1894, when an appeal was addressed to every postmaster in the Territories, numbering some 250, to secure from every farmer and stockman who obtained his mail at the office a complete statement covering his agricultural operations for the preceding year, and the number of live stock owned by him. Judging from correspondence on file in the Department replies came in fairly satisfactorily, but it cannot be learned that the information thus obtained was ever compiled, tabulated and published. The weak points of this scheme were undoubtedly, first, the difficulty in the way of postmasters in larger towns being able to collect the information wanted, however anxious they might have been to assist in the matter; and, second, the apathy on the part of many of these officers, which doubtless in the end defeated the object in view.

In grappling with the problem of how best to secure reliable agricultural statistics for the Territories soon after the organisation of the Department in 1898, difficulties peculiar to both the political status and the physical features of the country were encountered. In the first place, an important work had to be undertaken within very restricted limits as to expenditure, with departmental machinery only partially organised and barely sufficient, even by working long hours, to deal with the ordinary routine and administrative work. In the second place, no extensive municipal or county organisation existed, or was at all likely to be called into existence, by means of which the necessary information could be secured; and, thirdly, it was obviously impossible to apply methods of collecting statistics, which might be well adapted to the requirements of provinces like New Brunswick or Nova Scotia of small area and thickly settled, to a country of magnificent distances like the

Territories, over 300,000 square miles in area, and with the cultivated lands irregularly distributed throughout its length and breadth.

The Department based its initiatory operations on four fundamental principles: (1) That expenditure should be as small as would be consistent with efficiency; (2) that information should as far as possible be based on actual ascertainable facts; (3) that the system should be capable of expansion to keep pace with the rapid increase of settlement; (4) that in the selection of correspondents only men of acknowledged standing and soundness of judgment, and likely to be free from petty considerations of a local character, should be chosen.

In this connection, it may be stated that the annual expenditure for the last four years on all statistical work under the head of agriculture, including payments to registrars of births, marriages and deaths of between \$600 and \$700 per annum, has not exceeded \$1,800. Threshing machine operators appeared to the Department to be the most direct and trustworthy source of information relative to crop returns, inasmuch as they dealt with actual figures and had no inducement to exaggerate the results in individual cases. It was only necessary to ensure the prompt making of returns and the following section was, therefore, incorporated in The Threshers' Lien Ordinance:

"4. Every person who threshes any grain shall from time to time "as he may be required by the Commissioner of Agriculture send to the "Department of Agriculture such information and returns as may be required from him, and in default of his so doing he shall on summary "conviction be liable to a penalty not exceeding \$25."

There is estimated to be something over 205,000,000 acres of arable land in the Territories, of which not more than 900,000 acres are at present under cultivation. Future requirements in the way of the collection of crop statistics are, therefore, well worthy of consideration.

In 1898 the first crop statistics compiled by the Department were published in the Annual Report for that year, and were based on actual returns, by threshing machine operators, of the total quantity of wheat, oats and barley threshed, with an estimated yield per acre of each. It was only natural to expect no great things from a system just organised; nevertheless, the result was very satisfactory as out of 345 threshers who were asked to make returns only 23 failed to respond. The tables for 1898 show, therefore, the actual amount of grain handled by 322 threshers, plus an estimated amount for the 23 threshers who did not make returns. The actual threshing results and the estimates were shown separately in the tables.

In 1899 substantially the same plan was adopted except that a memorandum book, of such a size as to go in the pocket, was prepared and issued to each threshing machine operator in order to enable him to make his returns conveniently. The book contained an introductory chapter explaining the value of statistical work to the farmer and the object the Department had in view in compiling it, followed by extracts from Territorial Ordinances affecting threshing machine operators. The body of the book contained spaces for the names of each of the persons for whom threshing was done, the township and range in which he resided, the number of bushels threshed of wheat, oats and barley, with spaces for the number of acres upon which the crops were grown. Spaces were also provided to show the number of acres of breaking and summer fallow ready, at the date of threshing, for crop during 1900. That year 373 threshers furnished returns out of a possible 402.

The returns for 1900 were obtained in the same manner as the previous years, but were so complete that the Department was able to dispense with "estimated" results altogether.

During the past year, owing to the phenomenal crops, the number of threshers jumped to 760 and, on account of the prolonged threshing operations, it was found impossible to have the threshers' books sent in in time to have complete results compiled for publication in this Annual Report. A sufficient number of returns, however, had been received to permit of a very fair estimate being made, which was accordingly done, and a bulletin embodying the results was prepared and issued to the public press, transportation companies, financial institutions and others interested, on the 14th of January, accompanied by the following circular:

Owing to the prolonged threshing operations in the Territories, caused by the bountiful crop of the past season, complete threshing returns will not be available in the Territorial Department of Agriculture until the latter part of the winter, which will materially delay the issue of the annual crop bulletin. It has, therefore, been decided to publish the following estimate for the season of 1901, which has been compiled on a basis of several thousand returns of actual threshing results from all over the Territories, now at hand in the Department.

The yield per acre may be considered as correct within a fraction, but an element of uncertainty always enters into approximating the area under cultivation in any country presenting the unique features of the Territories, where the crop area is an ever increasing factor varying in its volume in sympathy with the influx of new settlers and the ability of older settlers to extend their operations. This condition, of course, involves a corresponding uncertainty in the weighted estimate. A final report of the season's crop, based on complete actual threshing returns, will be issued in March or April next, but in the meanwhile the following estimate will serve as a fair indication of what may be expected to those who for business reasons are interested in the question.

It will be understood, then, that the table hereto appended gives practically actual results for 1898, 1899, and 1900, but that the 1901 figures are estimated. The actual results will be published at an early date, and in the report for 1902 the corrections rendered necessary by these will be made in the comparative table. It will thus be possible to gauge the correctness or otherwise of the Department's crop estimate from year to year, a process that is absolutely essential if statistical estimates are to be of any value. In this connection it is interesting to note that the United States Federal Department of Agriculture has found it advisable to announce that it will not issue any further estimate of total production until such adjustments of its estimates for the last two years have been made as may seem to be required by the results of the census reports, an action which, owing to the absence of the usual figures at a time when they are of most interest, has occasioned some inconvenience in business circles.

Important and satisfactory as the results of the Department's attempts at the collection and compilation of agricultural statistics after harvest had proved themselves, it was, as already indicated, felt that with four years' results before it the time had arrived when the Department should place itself in a position to furnish for public information reports on the condition and, if possible, estimates of the probable yield of crops previous to harvest: and action was accordingly taken in this direction by the inauguration of a crop reporting service. For the present the staff of correspondents will be limited to about 50. Great care has been exercised in making the selection with the view of securing only the very best available men. The following circular, sent to a number of leading farmers and others, indicates the plan adopted by the Department in connection with the organization of this service:

I beg to inform you that this Department, recognising the urgent necessity that exists for obtaining and publishing from time to time reliable information with regard to the crops of the Territories previous to harvest time in each year, for the benefit of farmers, merchants, financial institutions and transportation companies, is organising a crop reporting service, and it has occurred to the Commissioner that you could be of service to the Department in this matter.

The work of a crop correspondent is of a comparatively simple nature, its value consisting almost entirely in the amount of intelligence and judgment displayed in furnishing the information the Department asks for and in the promptitude with which returns are forwarded. Briefly speaking, for the purpose of this service, the whole of the Territories has been divided into crop districts, for each of which two or more correspondents, reporting independently, will act. Three or four reports, at least, will be asked for annually, between April and November. These reports will take the form of answers to specific questions on printed forms, furnished by the Department from time to time.

Crop reporting services are invariably organised upon a voluntary basis; the interesting nature of the work, the receipt of the bulletins containing the tabulated results of it, as well as the knowledge that service of considerable value to the country at large is performed, being usually considered sufficient inducement to insure the co-operation of an adequate number of public spirited persons to carry on such work efficiently. This is notably the case in the United States where the Federal Department of Agriculture maintains a voluntary staff of 250,000 correspondents.

The Commissioner has, however, decided that, while the crop reporting corps in the Territories must also be organised on a voluntary basis, services of this sort should not entirely go unrecognised, and I am to say that each correspondent, who promptly and carefully furnishes the reports asked for during the season, besides receiving all publications of this Department free of charge, will have his subscription to one of the leading agricultural periodicals of the west prepaid by the Department, and will also be presented at the end of the season with one or more standard works on agricultural subjects of a published value of \$7.00 or \$8.00 so that correspondents whose services are utilised continuously may, in the course of a few years, accumulate valuable agricultural libraries.

With one or two exceptions, where business reasons interfered, all those to whom the above circular was addressed have intimated their willingness to assist the Department in this matter.

As the most satisfactory results cannot be expected from work of this nature until the correspondents have had one or two years' experience it would be well that the operations for the coming season should be confined to from one to three "condition reports" in which the condition of the crops at the particular time covered by the return will be expressed as a percentage of the condition at the same time in 1901. It is possible that conclusions based on these reports may be of some value, but they will necessarily gain in value as the correspondents gain experience in making the returns.

On account of the increase and distribution of settlement it was deemed advisable to make some changes in the arrangement of the crop districts hitherto existing which, of course, entailed a complete revision of the crop figures for the past three years. The districts as re-arranged may be described as follows:

Crop Districts.

District No. 1, Souris section of south-western branch of Canadian Pacific Railway. District No. 2, Soo Line. District No. 3, Moosomin, Whitewood and Broadview. District No. 4, Main line Canadian Pacific Railway, Grenfell to McLean. District No. 5, Regina and Moose Jaw. District No. 6, Western Assiniboia. District No. 7, Manitoba & North-Western Railway. District No. 8, East Saskatchewan. District No. 9, Saskatoon, Rosthern and Prince Albert. District No. 10, Battleford. District No. 11, West Saskatchewan. District No. 12, Edmonton and Wetaskiwin. District No. 13, Ponoka,

Lacombe and Red Deer. District No. 14, Innisfail, Olds and Didsbury.
District No. 15, Calgary and High River. District No. 16, Macleod,
Lethbridge and Cardston.

CROP STATISTICS.

DISTRICT AND YEAR	WHEAT			OATS			BARLEY		
	Bushels	Acreage	Yield per Acre	Bushels	Acreage	Yield per Acre	Bushels	Acreage	Yield per Acre
1.....	1898 804,164	50,455	15.93	292,259	14,919	19.63	45,718	1,892	24.16
	1899 1,239,759	78,813	15.73	497,148	16,334	30.50	42,685	2,107	20.25
	1900 549,956	79,375	6.92	274,504	14,276	19.22	45,514	1,881	23.64
	1901 1,863,801	95,452	19.52	676,775	17,304	38.90	57,741	1,634	35.33
2.....	1898 22,000	1,466	15.00	12,000	387	31.00	2,600	80	25.00
	1899 4,895	1,682	2.91	1,715	108	15.87	4	1	4.00
	1900 93,610	4,255	22.00	43,036	1,056	40.74	260	18	14.94
	1901								
3.....	1898 1,142,119	71,372	16.00	237,118	8,469	27.99	37,462	1,629	22.99
	1899 1,079,784	65,472	16.49	470,828	17,911	26.28	33,755	1,658	20.35
	1900 563,254	71,807	7.91	162,572	17,433	9.32	14,472	1,452	9.96
	1901 1,712,543	81,137	21.10	676,350	19,593	34.52	42,340	1,452	29.15
4.....	1898 1,460,317	80,348	18.17	579,249	14,558	39.65	23,597	1,204	19.50
	1899 1,968,666	104,949	18.75	595,496	19,938	29.86	19,866	866	23.15
	1900 908,491	118,752	7.65	359,802	21,474	14.70	15,813	1,046	15.11
	1901 4,114,874	139,282	29.54	1,318,539	29,595	44.55	39,817	1,188	33.51
5.....	1898 900,034	42,859	20.99	278,761	11,614	24.05	14,360	756	18.89
	1899 1,361,033	51,057	26.65	489,993	13,921	35.19	13,822	648	21.33
	1900 871,877	73,806	11.81	255,592	16,539	15.45	7,509	748	10.93
	1901 2,789,528	96,777	28.73	1,041,686	20,049	51.95	37,662	913	41.25
6.....	1898 500	28	17.85	9,800	200	44.00	1,550	42	36.90
	1899 1,290	35	36.85	28,871	568	50.82	2,104	47	44.76
	1900 1,578	49	32.20	19,886	690	28.82	338	36	9.38
	1901 8,360	283	29.54	46,001	960	47.91	3,905	96	40.67
7.....	1898 175,328	13,487	13.27	248,868	9,218	27.00	8,454	496	17.20
	1899 164,009	10,695	15.53	246,913	8,298	29.75	7,640	373	20.52
	1900 115,975	12,369	9.37	224,943	12,279	18.31	5,980	443	13.49
	1901 355,279	15,294	23.23	596,763	14,439	41.32	19,172	593	31.99
8.....	No Returns			No Returns			No Returns		
9.....	1898 283,925	17,002	17.65	127,205	6,840	18.69	49,803	2,275	22.00
	1899 238,849	15,632	15.27	164,527	5,655	29.10	37,539	1,834	21.10
	1900 490,616	23,535	17.02	269,344	9,303	27.86	59,250	2,607	22.73
	1901 770,237	35,235	21.85	497,204	12,543	39.64	88,224	2,757	32.00
10.....	1898 14,049	702	20.33	16,152	538	30.66	1,915	87	22.00
	1899 7,518	440	17.08	12,472	453	27.53	1,193	53	22.50
	1900 24,028	1,165	20.62	36,653	1,071	34.22	1,942	79	24.58
	1901 59,500	1,750	34.00	82,338	1,611	51.10	3,413	94	36.30
11.....	No Returns			No Returns			No Returns		
12.....	1898 627,201	24,122	26.10	1,115,358	24,246	46.53	213,103	6,551	31.02
	1899 690,642	27,604	25.02	1,406,864	32,302	42.87	120,389	4,560	26.46
	1900 443,423	23,609	18.78	1,476,913	45,930	32.15	123,543	5,101	24.22
	1901 691,425	26,624	25.97	4,120,265	61,050	67.49	299,644	5,701	52.55
13.....	1898 27,432	1,246	22.25	134,853	3,290	41.25	17,208	617	28.75
	1899 30,647	1,698	19.05	163,450	3,804	42.96	23,876	768	31.08
	1900 34,152	1,840	18.56	389,305	10,492	37.11	50,268	2,179	27.20
	1901 65,919	3,010	21.90	772,125	18,592	41.52	73,132	2,839	25.75
14.....	1898 14,806	572	26.00	130,204	2,830	46.50	15,603	447	34.82
	1899 8,338	471	17.70	126,822	2,885	44.42	7,202	306	23.55
	1900 8,377	465	18.01	178,051	4,803	37.06	16,329	689	23.70
	1901 12,285	1,050	11.70	274,042	9,663	28.35	20,650	989	20.87
15.....	1898 88,221	4,107	21.48	408,760	5,263	39.66	17,938	629	35.90
	1899 38,541	1,908	21.31	254,238	6,186	41.09	15,315	553	27.69
	1900 37,838	1,723	21.96	324,981	9,161	43.11	25,076	792	31.06
	1901 67,623	2,820	23.97	553,668	12,646	43.78	34,422	1,122	30.67
16.....	1898 34,292	1,280	26.79	137,672	3,185	43.22	14,752	467	31.58
	1899 63,947	3,573	17.89	216,414	5,826	37.15	10,035	433	23.17
	1900 58,833	2,597	22.65	241,337	6,713	35.95	10,502	468	22.44
	1901 140,658	5,595	25.14	414,224	10,248	40.42	16,815	648	25.94
Territories	No Returns			No Returns			No Returns		
1898	5,542,478	307,580	18.01	3,040,397	105,077	28.93	440,512	17,062	26.29
1899	6,915,623	363,523	19.02	4,686,036	134,938	34.81	337,421	14,276	23.62
1900	4,028,234	412,964	9.75	4,226,162	175,439	24.08	353,216	17,044	20.72
1901	12,736,642	508,564	25.44	11,113,066	229,439	48.43	736,749	20,044	36.75

HARVEST HELP.

Although the Department was at considerable disadvantage in securing information as to the condition of the crops, owing to the nonexistence of a service charged with this duty, it became evident, very early in the season, that the yield would be a phenomenal one and that the provision of the necessary harvest help deserved immediate and serious consideration. It was understood that the railway authorities were preparing to run the usual "harvest excursions" from the eastern provinces, but it was not known to what extent these would provide for the demand for help that was sure to arise both in Manitoba and the Territories. It was brought to the Department's attention that from 1,000 to 1,500 men could be secured along the line of the Calgary and Edmonton Railway—chiefly Galicians—and negotiations were at once opened with the Canadian Pacific Railway authorities, and with the Commissioner of Immigration at Winnipeg, with a view to securing transportation at a cheap rate for these men. Shortly after, however, it became apparent that the supply of labour from the east would be sufficient for requirements, and, while the Galician labour formed a valuable reserve in case of necessity, it was not thought advisable to unsettle this portion of the community by taking further action in the matter.

Between 15,000 and 20,000 harvest hands were brought into Manitoba and the Territories. Unfortunately, however, owing to the fact that harvesting became general in the Territories from a week to ten days later than in Manitoba, some of the excursionists who came straight through did not at once find employment. This did not, however, deter many of them from asking the most exorbitant wages, which our farmers could not afford to give. The Department, as well as the various Boards of Trade throughout the Territories, interested themselves actively in placing help where it was required, Regina Board of Trade going as far as to open a special employment bureau for this purpose. Some complaints of being unable to secure work were made. A typical case of this sort occurred at Indian Head which was brought to the notice of the Department by the railway authorities, who wired the Department as follows: "Eastern farm labourers at Indian Head demanding they be sent home, cannot they be engaged now?" As the result of enquiries instituted by the Department it was found that, on the morning on which the complaint was made, six farmers had come into town for the purpose of securing help and were unable to get it, that there were no men unemployed, and that the telegram sent to Winnipeg "Crowd demanding transportation," was sent by one man who was either homesick or too lazy to work and who himself comprised the "crowd." In brief it may be said that all who were willing to work secured situations, and that the demands of the farmers for harvest help were fairly well met.

It is evident that the development of the Department's statistical work will greatly facilitate the arrangements for supplying help of this kind in good time in future.

IMPORTATION OF THRESHING OUTFITS.

Notwithstanding the heavy purchases of threshing outfits in the Territories, the number of machines having increased from 435 last year

to nearly double the number this, it was found that threshing would likely be seriously delayed if greater facilities for doing the work were not provided. Early in November the Canadian Pacific Railway Company Freight Department, acting on representations made to them by this Department and the Winnipeg Board of Trade, intimated its willingness to assist in the matter by furnishing transportation for threshing outfits from points in Manitoba to Territorial points where these services were required under the following conditions:

Under the special circumstances outlined, this company is willing to assist to the extent of one half of its freight earnings and to carry those in charge at a rate of one cent per mile. Subject to the following regulations: The threshing machines "not new" will be wayhilled at full tariff rates and returned free to the original point of shipment. If the threshing machines are moved from point to point, they will be wayhilled at tariff and returned free from the last stopping point to the original point of shipment. The men, and who must accompany the machines, will be carried at one cent per mile in each direction, the number in charge of a machine being limited to eight.

It is understood the Government, Board of Trade, Grain Exchange, or some other competent authority will advise this company where the threshing machines are required and where they will be shipped from. The company will then issue the necessary instructions to agents.

It was understood that the Department would advise the company where machines were required, the Winnipeg Board of Trade co-operating at the Manitoba end. Telegraphic reports were at once obtained from correspondents of the Department at various points which indicated that while threshing was well advanced in some districts, in others from 75 to 90 per cent. of the work remained to be done. Steps were taken to make the situation public through the Winnipeg newspapers, and the Winnipeg Board of Trade was advised. As a result of this action a large number of Manitoba outfits were brought in to points where better threshing facilities were required. Some delays were caused in threshing by lack of experience on the part of members of Territorial threshing gangs in handling the advanced type of machinery now in general use. This is hardly likely to be of serious moment in the future.

WHEAT BLOCKADE.

By far the most important matter in connection with the crop this year is what has come to be popularly known as the "Wheat blockade." In order to make the situation clear it may be well to consider it briefly in its several aspects. In the first place, a glance at the map will show that practically the whole wheat exporting area of the Territories is comprised within that portion of Assiniboia which is bounded on the east by Manitoba, on the west by the Third Meridian and the Missouri Coteau, on the north by township 25 and on the south by the International boundary. In addition to this there is that portion of Saskatchewan lying along the line of the Qu'Appelle Long Lake and Saskatchewan Railway between Saskatoon and Duck Lake. Bearing in mind the fact that the wheat crop of the Territories is to be considered for business purposes along with that of the Province of Manitoba, the whole being known to the commercial world as "Manitoba Wheat," it may be stated that the wheat blockade is due to the following causes, all intimately related to each other:

1. Phenomenal crop yields in Manitoba and the Territories,

2. Late threshing due to the unusually heavy crop, inadequate supply of machinery and help, and adverse weather for a portion of the time;

3. Insufficient elevator accommodation at country points;

4. Car and locomotive shortage.

It will not be necessary to elaborate any of the above causes, which indeed are only too palpable. A few words may, however, be permitted with respect to the last. The transportation companies which, so far as the Territories are concerned, is the Canadian Pacific Railway Company, have come in for a considerable amount of abuse because of their inability to move the wheat crop. Whatever their failings in this direction, sight should not be lost of the fact that they were face to face with a very serious transportation problem, probably one of the most unique situations that has ever occurred in the history of the American continent.

Threshing commenced in the Territories about the beginning of September, in Manitoba somewhat earlier. Almost immediately bad weather started, causing serious delay, and further delay occurred in marketing by the action of the Grain Dealers' Association in closing the market for a time to avoid being loaded up with tough wheat. New wheat commenced to move about the second week in September but, owing to the circumstances above mentioned, shipments were light. It was not until well on in October that heavy business began. Lake navigation closed on 5th December. The companies were, therefore, called upon to handle in about six weeks as much as possible of some fifty-six million bushels of wheat. Some idea of the work before them may be formed when it is stated that it would require 84,000 40,000 lb. cars, to say nothing of the proportionate number of locomotives, to move this quantity of wheat. It may also safely be taken for granted that, even if the railway had been able to move the bulk of the crop in this space of time, there is good reason to believe that the water transportation would have proved lamentably insufficient.

The result was what might have been expected: the transportation facilities proved utterly inadequate. Country elevators became choked, speculators on the watch swooped down on such farmers as were in the unfortunate position of having to sell, paying from 7 to 10 cents under market price, and business was greatly hampered in all directions. Shortly after navigation closed, the terminal elevators became filled to their utmost capacity, and the blockade became complete.

Permanent relief can scarcely be looked for before the opening of lake transportation in the spring. As to the feasibility of the "all rail route," Mr. Wm Whyte, assistant to the President of the Canadian Pacific Railway, is quoted as saying at a meeting of the Winnipeg Board of Trade, that no railroad company attempted to move grain all rail, and went on to show that even if the 5,000 or 6,000 cars at the road's disposal were used for this purpose it could not have a great effect. A trip from say Indian Head to Montreal and return for a wheat train would take at least a month. Some light is thrown on the otherwise gloomy aspect of affairs by the news that there is a steadily increasing demand for our wheat at Minneapolis and Duluth. American millers are looking for our wheat which is now listed on the Duluth exchange. There are, however, still some difficulties to be settled with regard to milling in bond, the American tariff practically prohibiting importation for home

consumption. It the event of this matter being satisfactorily adjusted new outlets will be provided.

While the questions affecting the transportation of grain are so many and cover so wide a field that it is difficult to bring home blame for the present unfortunate condition of affairs to any particular agency, it is clearly the imperative duty of every one connected with the transportation of the western crop to see that proper facilities are provided at the right time and prevent, if possible, a recurrence of the present unfortunate situation which can only mean disaster to western interests, and, in order to have no excuse for not making such provision, it is incumbent on this Department (so far as the Territories are concerned) to place each year in the hands of transportation officials and others connected with the matter the most reliable estimates of crop production that can be formed, at the earliest possible opportunity.

Apart from the general question above considered it may be interesting to observe the position of the wheat exporting portion of the Territories compared with the corresponding portion of the Province of Manitoba. The following table will make clear that in several respects we are at a disadvantage. It is, of course, only a matter of time when this state of things will be remedied but in the meantime it is as well to know "where we are at" in order that the farmers themselves may, in self-protection at least, take the matter of local grain storage in hand.

WHEAT Export Area Statistics.

DETAILS.	N. W. T.	MANITOBA.
Approximate acreage of districts now exporting wheat	108,464,400	135,732,960
Acreage under crop, 1901	508,564	2,011,835
Required for home consumption (bushels)	780,000	1,530,000
Required for feed (bushels)	385,118	3,000,000
Required for seed, 1902 (bushels)	906,396	
Surplus available for export (bushels)	10,665,128	45,972,085
Elevator accommodation in export district (bushels)	2,561,000	14,898,000
Railways in export district (miles)	774	1,736
Percentage of elevator accommodation per bushel of export wheat	.2500	.3200
Railways to each square mile export district (miles)	.0345	.0619
Export bushels per mile of railway	13,216	26,481

GRADING OF ALBERTA OATS.

Attention has already been drawn in former reports to the beneficial result likely to attend the publication of statistics relative to the production of oats, which has come to be regarded as the great staple crop of Northern Alberta, and more than usual interest has been brought into this matter by a serious controversy which arose between the Edmonton Board of Trade and the Western Grain Standards Board with regard to the official grading of Alberta oats. It has come to be recognised that that portion of Alberta lying north of the Red Deer River presents almost ideal conditions for the growing of this cereal of the very finest quality. As an expert opinion on this subject, I might quote the following from the address delivered by Mr. William Martin, as President of the Winnipeg Grain Exchange on 9th January, 1901. "For the produc-

tion of oats," says Mr. Martin. "we have long looked to the territory of the Manitoba and North-Western Railway, but the new settlements in the Edmonton district bid fair to become the finest oat producers of the North-West, while the quality is something never before attained in Canada." As might have been expected, the acreage devoted to this crop has steadily increased year by year and the especially favourable season resulted in a crop of about five and a half million bushels. The chief market for oats in this district has hitherto been British Columbia, but this year the supply of oats so far exceeded the demand from that province that the local business men found it advisable to bestir themselves with a view to opening up some other outlet for the season's crop. Representations were therefore made to the Federal Department of Agriculture, Ottawa, for the purpose of enlisting its assistance in disposing of some of the surplus to the British War Office for use in South Africa. The Department readily agreed to co-operate, and on October 12th were able to announce that negotiations with the War Office authorities had been successful. In making the arrangements for the purchase of oats in Alberta the Department stipulated that the grain buyers who sell to the Department for South Africa were to pay the farmers who delivered oats at the railway stations, according to the specifications, not less than 24 cents per 34 lbs. The specifications of quality were as follows: The oats to be white, good, clean, unmixed, hard, dry, plump and sweet, weighing not less than 38 lbs. to the bushel, in thoroughly safe condition for shipment or storage. It was announced that the arrangements had been made for the disposal of up to half a million bushels in this way. This action of the Government had apparently the effect of drawing attention to the oat situation, for activity in the market commenced and prices rose. The effect of course was to effectually stop the delivering of oats on Government account, although 30 cents was eventually paid.

The next thing was a meeting of the Western Grain Standards Board in Winnipeg at which the following resolution was passed:

Owing to the difference in the general character of oats grown this season in some districts of the North-West Territories, it is hereby resolved that such oats shall be graded as follows: No. 1 Alberta oats shall be plump, clean and free from other grain and weigh not less than thirty-seven lbs. per bushel. No. 2 Alberta oats shall be reasonably clean and reasonably free from other grain and weigh not less than thirty-four lbs. per bushel. Above applies only to injured grain. Sound grain grades as defined in the Act.

The reasons given for this action were that although the oats delivered in Winnipeg appeared to be fully up to inspection requirements, so much so that the first shipments were graded No. 2, they were found on a milling test to be frosted.

Being damaged and, therefore, unsuitable for milling, they could not be graded in the usual way and special grades were, therefore, created. The inevitable result of the association's action was to depress prices and, although the market eventually recovered, deliveries were for a time practically suspended.

The Edmonton Board of Trade held a meeting to protest against the action of the association, claiming that, 1st: The new grades discriminated unfairly against Alberta oats inasmuch as they implied that Alberta oats alone were weather damaged; and, 2nd, That the action of the Association was dictated by selfish motives for the purpose of manipulating the market.

Resolutions have now been passed by both sides asking for investigation by the Department of Inland Revenue and it is sincerely to be hoped that the results of such investigation will be to prevent any future friction and to restore confidence, on the part of the trade in the quality of Alberta oats, and on the part of Edmonton business men in the business methods of the Winnipeg dealers.

TERRITORIAL GRAIN GROWERS' ASSOCIATION.

Although the wheat blockade has had a most unfortunate effect on business in the Territories it has had at least one good result, namely, in apparently arousing our farmers to the fact that combination and co-operation are necessary if any headway is to be made against the various grievances by which they are each year harassed in the disposal of their produce, and this feeling has been given tangible expression to by the formation of The Territorial Grain Growers' Association. The initial meeting in connection with this association was held at Indian Head on January 7, 1902, which, in your absence and at the request of the promoters of the movement, I attended both for the purpose of showing the Department's sympathy with the movement and to render any assistance possible in connection with the organisation details. Upon the invitation of the provisional president, Mr. W. R. Motherwell, I addressed the meeting, which was quite a large and enthusiastic one, and explained the manner in which the Territorial Live Stock Associations had been organised, and suggested that the agricultural societies should be asked to affiliate with the central organisation. After some discussion a constitution was adopted which provides for a central association and subordinate associations. The former is comprised of delegates elected from the latter.

The object of the organisation is put forth in Section 2 of the constitution as follows :

(a) To forward the interests of the grain growers in every honourable and legitimate way.

(b) To watch legislation relating to the grain growers' interest, particularly that affecting the marketing of their grain.

(c) To suggest from time to time, as it is found necessary through duly appointed delegates, the passing of any new legislation to meet changing conditions and requirements.

The constitution provides for a membership fee of \$1. It was agreed to admit agricultural societies upon the payment of a fee of \$5 per annum, such societies to be represented by a delegate duly appointed by their board of directors. This privilege was, however, since withdrawn. Annual meetings of branch associations are to be held during the month of November, and the central association is to hold its meeting between December 10 and 20 in each year. It was decided to adopt the practice of the Live Stock Associations in respect to the appointment of the secretary treasurer by the board of directors to hold office during the pleasure of the board and to have the powers of a managing director. The officers of the central association will be a president, one vice president each for Assiniboia, Alberta and Saskatchewan, a secretary treasurer and five directors. Branch associations will have a president, vice president, secretary treasurer and five directors. The Commissioner

of Agriculture will be an *ex officio* member of both branch and central boards of directors. Also a resolution was passed requesting the Commissioner of Agriculture to utilise the services of nominees of the provincial board of directors of the association for institute work during the present year, in order that the aims and objects of the association might be brought prominently before the public in the Territories, and thus awaken an interest in the work of the association and secure a large and representative membership. The association starts under the most favourable auspices and cannot fail, if properly handled, to be productive of the most beneficial results. Much will necessarily depend upon the personnel of the executive and especially on the capability of the secretary treasurer. Most remarkable results have been achieved by just such associations in Kansas and other parts of the American Union and there is no reason why, with the material available, equally good work should not be done here.

AGRICULTURAL EXPERIMENTS.

An attempt has been made in previous reports to point out the importance of a much wider extension of systematic agricultural experimental work in the Territories, particularly throughout the irrigated sections of the country, where the nature of the problems facing the agriculturalist differ so entirely from Central Eastern Assiniboia, to which the Dominion Government at present confines its efforts in this direction. For instance, in the more humid districts of the Territories the great aim of cultivation is undoubtedly the preservation of soil moisture, while in the irrigated sections, this is a matter of comparatively small importance. There, the farmer wants to know at what stages of growth water may most advantageously be applied to the different crops; he is interested in ascertaining what particular varieties suitable to our climatic conditions respond most generously to artificial watering and in seeking the solution of a multitude of other, more or less important problems in which the farmers elsewhere are not at all interested. I am, therefore, pleased to be able to report that the Canadian North-West Irrigation Company has during the year made a valuable contribution towards the extension of agricultural experiments in the Territories. This company, being largely interested in colonisation work, and realising the absolute necessity which exists for experimental work under irrigation, has acquired a farm within a few miles of the town of Lethbridge where very complete agricultural experiments are now being carried on under the able management of Mr. W. H. Fairfield, late Professor of Agriculture of the Wyoming Agricultural College. The station covers an area of 320 acres of which 85 acres is now under cultivation. A large number of fruit trees have been put in, principally crab apples, plums and small fruits. The leading feature of the experiments at that station, however, is investigations into the possibilities of growing alfalfa and other fodder crops successfully under irrigation in the Lethbridge district. This station, with the one now under operation in the vicinity of Calgary, under the management of this Department, fairly well supplies the requirements of that portion of the West where irrigation is at present extensively resorted to.

CO-OPERATIVE AGRICULTURAL EXPERIMENTS.

In the Departmental report covering 1898 I took occasion to refer to the fact that the North-West Territories occupy an absolutely unique position from an agricultural standpoint. There is not a state or province on the whole continent of America presenting within its boundaries so many variations of soil and climate. It is, therefore, apparent that conclusions arrived at through experiments at any one point, or even at a limited number of points, could not safely be considered as of general application. In fact, vastly more harm than good would inevitably ensue from such procedure. Admitting, therefore, that certain varieties of grains, grasses, roots or trees might do excellently in one locality and prove more or less of a failure in others, it is palpably evident that a necessity exists in the Territories for a scheme of experimental work economical enough to be within the scope of practical politics, efficient enough to gain the confidence of farmers and, at the same time, sufficiently wide spread to take in every district of uniform climatic and soil conditions.

I desire to bring to your attention the excellent work which has been accomplished in the Province of Ontario by the Agricultural and Experimental Union. This organisation was formed in 1880 from amongst the ex students of the Ontario Agricultural College at Guelph. In 1884 the first definite experiments were outlined and conducted by Dr. Hare with the voluntary assistance of some nine or ten of these gentlemen. In time the field afforded through the medium of the ex students, became entirely too limited in scope for this aggressive association and it was, therefore, decided to call in the assistance of reliable farmers all through the province. Since that time the system has developed until during the past year 3,485 farmers all through the province were conducting experiments upon over 12,000 plots. It is of interest to quote the following statement as to the value of these co-operative experiments by Professor Zavitz, the Secretary of the Union:

Farmers who conduct these co-operative experiments in their own fields with varieties of farm crops, methods of cultivation, ways of increasing soil fertility, etc., obtain valuable information which they cannot possibly get in any other way.

The Union furnishes a good method by which farmers can secure pure seed of the best varieties of grain, root, fodder, silage and hay crops to test on their own soils, and thus find out in a very practical way which special kinds are best suited to their own particular farms.

Experimental work encourages careful handling, close observation, accurate calculation, and economical methods.

Experimenters get a start in pure seed of the best varieties of grain crops which rapidly increases in quantity thus furnishing seed for sowing on large areas and for selling at good prices.

The co-operative experiments located on over three thousand Ontario farms form object lessons for the farmers in their respective neighbourhoods.

Farmers are frequently enabled to purchase pure seed of leading varieties of grain from their neighbours who are successful experimenters.

Summary results and important conclusions from successfully conducted co-operative experiments are printed annually in the report of the Experimental Union, which is distributed in large numbers from the Department of Agriculture, Toronto, Ontario.

Important features of the experiments are frequently discussed in the field, at the fireside, and in the meetings of farmers' institutes.

Results of experiments conducted by other farmers and by the experiment stations are read and studied with increased interest.

Properly conducted experimental work adds pleasure to farm life and forms a very wholesome influence in keeping the boys on the farm.

The whole system leads to a substantial increase in farm profits, and to a steady advance in agricultural education throughout Ontario,

The following extract from the annual address of the President of the Union, Mr. D. L. Gibson, as to the value of experimentations, will also bear repetition :

First: It encourages *thoroughness*, a quality that we as farmers must court.

Second: It sharpens our powers of *observation*. When watching the progress of the experiment we are lead to notice things that might otherwise escape our attention. Those two words "*I noticed*," have been the germ of much of the invention and advancement of the world.

Third: We get a taste of the care, constant attention, and trouble that the carrying on of experiments involves, and as a consequence there is created within us a more sympathetic feeling towards experimental stations, and we also become less impatient for the findings of these stations.

Fourth: It gives us a sort of elementary schooling in the work of experimentation which, it seems, the progressive farmer must undertake in some phase or other of farm work.

There is in active operation today an experimental farm, under the control of the Dominion Government, at Indian Head, which fairly covers the requirements of the easterly portion of the Territories, while the experimental station under irrigation at Calgary may be said to serve the purposes of the district of limited rainfall. At both these farms experiments are being conducted with a view to ascertaining the most suitable varieties of grains, grasses, etc., for the stockmen and farmers of each district served. I would strongly urge that the Department take the initiative during the present year to organise an agricultural experimental union for the Territories. The existing experimental stations could doubtless be drawn upon to a considerable extent for suitable material wherewith co-operative experiments could be carried out. The expenses incidental to directing the operations of the proposed association would be a mere trifle. Just as the farmers' institute movement in Canada has been characterised the "university extension" movement, the agricultural experimental union scheme might appropriately be termed the "experimental farm extension." All thinking persons nowadays realise the benefits to be derived from the greatest possible expansion of agricultural experimental work, and the tendency all over the world of recent years is distinctly in the direction of localisation with a view to gaining the most reliable results. From correspondence and conversations which I have had with farmers all through the Territories I feel certain that such an association when once established would be liberally supported. The principle of co-operative experiments has been accepted in most of the States of the Union to the south of us, as well as by the Federal Government, and the work, where in good hands, seems to be most successful in every way and would appear to be worthy of imitation in the Territories during the early stages of our growth, when the necessity for gaining and diffusing the greatest possible amount of information touching our agricultural abilities and possibilities is particularly apparent.

In order to get this work initiated I would suggest that, after a series of systematic co-operative experiments have been outlined by the Department, the agricultural societies be invited to take charge of the work in their districts. The particular line of experiments most suitable for each locality can then be decided upon by each board of directors and all reports transmitted through the secretary. It is evident that the interests of the Department and the societies are identical in this respect, in fact The Agricultural Societies Ordinance specifically mentions experimental work as one of the subjects for which such societies are organised.

The advantage to the Department of having a firmly established local organisation through which to carry on this work is obvious, while, on the other hand, a wider scope of usefulness is thus afforded these societies, which it is believed they will readily embrace and which will have a tendency to advance the agricultural societies system one step towards the position of importance they ought to occupy in the agricultural life of the West.

CALGARY EXPERIMENTAL STATION.

The following is the report of Mr. P. T. Bone, C.E., Manager of this station :

Report of P. Turner Bone, C. E., Manager Calgary Agricultural Experimental Station.

I have the honour to report herewith on the work of the Calgary Agricultural Experiment Station for the year 1901.

The year was ushered in with cold weather and the thermometer registered below zero for the first ten days of January. On the 5th of the month the coldest day of the winter was recorded—34 degrees below zero. After the cold wave had passed the winter was mild. The temperature thereafter never failed to rise above zero during the day and after the 5th of March it never fell to zero.

The snow fall during the winter was fully 30 inches but at no time was there more than 3 or 4 inches on the ground. After a fall of snow, about the middle of April, there was good spring weather and seeding operations were started and were carried on with little interruption. The month of May was warm, with frequent showers during the latter part, and a good start in growth was made. June, however, was extremely wet and cold. The average temperature for the month was lower than that for May, and the headway obtained in May was not maintained. July continued almost as wet but very much warmer, and the evils of the low June temperature were to a great extent overcome. August weather was good and practically dry and haying operations were successfully carried on with little lost time. At the beginning of September the weather again broke and continued wet all through the month causing great delay in harvesting operations. A heavy hail storm on the first of the month damaged the crops on the station and on the neighbouring farms. The loss thus caused would run from 10 to 30 bushels per acre.

October weather was all that could be desired and crops in the district were secured in good condition. The crops were generally heavy and in most cases fair returns were obtained, notwithstanding the loss from hail. A cold dip below zero at the beginning of November put an end to fall ploughing and this has been left in an unfinished condition. The rest of November and December was mild and dry and the roads were in excellent condition for hauling and marketing grain.

The work on the station consisted in great part of a repetition of the previous year's experiments, which had little value for purposes of comparison on account of the damaging weather at harvest time throughout the whole of Alberta that year. The experiments repeated were designed to determine the most suitable varieties of grains for the district. A

September hail storm, which swept throughout the entire district, has unfortunately again partially made the results obtained from the experiments misleading. The yields obtained cannot be taken into account in comparing the varieties in that respect, as the farthest advanced suffered more than the later maturing varieties. The part of the experiments dealing with the earliness of the varieties has, however, in the case of wheat and oats, been of considerable value.

The varieties of barley obtained from Montana were somewhat late in being received, and were thus sown later than the Canadian varieties. The barleys, therefore, cannot be intelligently compared on a basis of this year's results.

Sufficient seed has, however, been secured from them to ensure their being sown at the most favourable time during the coming year.

The experiment with fall wheat undertaken last year has demonstrated the feasibility of growing this variety in certain years. It will, of course, require repetition for a number of years to determine whether it will survive every winter and be a paying crop to grow. The winter preceding, during which this crop of fall wheat was in the ground, certainly was as unfavourable a one for fall crops as could well be imagined. The fact that the wheat survived it speaks volumes for the hardiness of this crop. It is to be hoped that experience will demonstrate beyond doubt that fall wheat is a feasible crop, as it would probably work in admirably with a grass farm rotation, and, owing to the excellent market for hay in the Kootenay district, it is likely that branch of farming will be extensively followed in Central and Southern Alberta.

The part of the experiments bearing on the suitability of fall wheat as a crop to smother out sweet grass has shown that it is useless for this purpose. The sweet grass was the earliest to start in the spring. It thus got much ahead of the fall wheat and retarded its growth. Consequently the patches of wheat which were thickest with sweet grass were green when the rest of the crop was over ripe. The yield was thus much below what a crop of uniform ripeness should have given. Fall wheat has again been sown on land which is practically free from sweet grass and a better yield may be looked for.

The experiments initiated last year with a view to testing the possibilities of growing alfalfa did not, I regret to state, yield any results, as we failed to obtain a stand. It was, however, apparent that the fault rested entirely with the seed, and I would recommend that the attempt be repeated during the coming season.

Experiments have been commenced to test a number of pasture grasses suitable to the district. During the past winter I devoted considerable study to this question and as a result recommended that the following varieties should be given a trial: Red Top (*Agrostis vulgaris* or *Agrostis alba*), Orchard Grass (*Dactylis glomerata*), meadow fescue, (*Festuca elatior*), and Alsike clover (*Trifolium hybridum*). Half acre plots were sown with the three first named grasses during the summer. All have made a good thick growth, but until they have come through the winter they cannot be intelligently reported on.

The extreme wetness of the season, particularly during June and July, when on 28 days nearly 12 inches of rain fell, put a stop to all attempts at irrigation. Beyond making a start practically no irrigation was done as the land was in most places much too wet.

Probably the most important information derived from this and

previous years' experiments is in regard to the eradication of sweet grass. Troublesome as this weed is, it is gradually yielding to the treatment of ploughing under in spring when in flower and immediately seeding heavily with a smothering crop of grain. The land on the station when this treatment commenced was thickly infested, but is now sufficiently free from it to grow crops without detriment from it. The grass is not by any means yet eradicated and under summer fallow would grow as thick as ever, but it is now so weak as to give reason to believe a few more smothering crops will finally kill it.

As in the previous year, pease which were experimented with failed to mature. They were still in flower in September.

Sugar beets also proved a failure. Excepting a few weak plants, there was no evidence of the seed having germinated.

Timothy and bromus did well, the former giving a yield of 2 tons and the latter of $2\frac{1}{2}$ tons per acre.

The following tables give the results of the experiments:

SPRING WHEAT.—Three varieties.

VARIETY	Size of plot acres	Seed bed	Seed per acre	Method of seeding	Date of seeding	Date of cutting	Yield per acre	Weight per bushel
Dawn	0.25	spring ploughing	$1\frac{1}{2}$ bus	press drill	Apr. 24	Sept. 10	20	59 lbs.
Preston	0.9	"	"	"	"	"	20	58 "
Red Fyfe.	0.9	"	"	"	"	Sept. 19	21	52 "

REMARKS—In the three cases there was loss in yield through hail.

OATS.—Four varieties.

VARIETY	Size of plot acres	Seed bed	Seed per acre	Method of seeding	Date of seeding	Date of cutting	Yield per acre	Weight per bushel
Impro'd Ligowa	0.9	spring ploughing	$2\frac{1}{2}$ bus	press drill	Apr. 30	Sept. 4	25	41 lbs.
Victoria Prize . .	0.9	"	"	"	"	" 10	23	$41\frac{1}{2}$ "
Banner	0.9	"	"	"	"	" 18	33	37 "
White Russian . .	0.5	"	"	"	May 15	" 18	40	36 "

REMARKS—In each case there was a loss in yield through hail.

BARLEY.—Five varieties.

VARIETY.	Size of plot acres	Seed bed	Seed per acre	Method of seeding	Date of seeding	Date of cutting	Yield per acre	Weight per bushel
French Cheval'r.	0.088	spring ploughing	2 bus	press drill	May 3	Sept. 10	23	50 lbs.
Canad'n Thorpe.	0.04	"	"	"	"	Sept. 9	12	48 "
Chevalier (Montana)	0.644	"	"	"	May 18	Sept. 19	28	44 "
Kuma Kulla (Montana)	9.15	"	"	"	"	"	27	46 "
Golden Thorpe (Montana) . .	0.175	"	"	"	"	"	23	45 "

REMARKS.—In each case there was a loss in yield through hail.

FALL Wheat.

VARIETY	Size of plot acres	Seed bed	Seed per acre	Method of seeding	Date of seeding	Date of cutting	Yield per acre	Weight per bushel
Pincher Creek Seed	2	July ploughing	1½ bus	press drill	Aug. 1 and 15	Aug. 28	26	59½ lbs.

REMARKS.—Yield reduced and ripening retarded through crop being sown on land infested with sweet grass.

SPELTZ.

VARIETY	Size of plot acres	Seed bed	Seed per acre	Method of seeding	Date of seeding	Date of cutting	Yield per acre	Weight per bushel
	0.5	Spring ploughing	2 bus	press drill	Apr. 25	Sept. 20	38	39 lbs.

REMARKS—Loss in yield through hail.

RAPE.

VARIETY	Size of plot acres	Seed bed	Seed per acre	Method of seeding	Date of seeding	Date of cutting	Yield per acre	Weight per bushel
Dwarf Essex	0.5	Spring ploughing	4 lbs.	Drilled 18" aprt	May 24	Nov. 1	35,283 lbs.	

REMARKS—Cultivated during summer.

POTATOES.

VARIETY	Size of plot acres	Seed bed	Seed per acre	Method of seeding	Date of seeding	Date of raising	Yield per acre
Brownwells		Summer		Planted in drills			
Winner	0.026	fallow	20 bus	30" aprt	May 24	Sept. 24	292 bus.
Earliest of All ..	0.023	"	"	"	"	"	212 "
SharpesSeedling	0.0045	"	"	"	"	"	200 "
Amer. Beauty	0.0016	"	"	"	"	"	281 "
Amer. Wonder	0.0023	"	"	"	"	"	200 "

TABLE of Monthly Summaries of Meteorological Returns.

MONTH	Maximum Temperature	Minimum Temperature	Average Maximum	Average Minimum	Mean Temperature	Date of Maximum	Date of Minimum	Rainfall inches	Snow inches	Total Precipitation in inches
January .. .	49.9	-34.9	26.5	3.8	15.1	13th	5th	.	3.25	0.32
February .. .	57.6	-21.9	27.1	5.1	16.3	28th	5th	.	7.95	0.79
March .. .	55.9	-16.4	42.8	19.0	30.9	15th	4th	.	12.00	1.20
April .. .	70.1	10.2	50.2	24.1	37.2	29th	16th	0.01	7.75	0.78
May .. .	84.1	19.2	65.1	36.6	50.8	26th	10th	1.86	.	1.86
June .. .	78.1	25.5	60.8	37.3	49.0	19th	8th	5.92	1.00	6.02
July .. .	83.9	34.7	70.3	43.2	56.7	18th	15th	5.71	.	5.71
August .. .	87.4	32.0	73.4	42.9	58.2	16th	18th	0.33	.	0.33
September .. .	77.1	20.2	56.5	31.5	44.0	1st	29th	2.52	2.00	2.72
October .. .	74.6	17.0	64.0	29.7	46.8	21st	15th	0.12	.	0.12
November .. .	59.4	-6.0	40.9	15.3	28.1	30th	2nd	.	5.25	0.52
December .. .	57.3	-3.6	36.7	14.1	25.4	30th	13th	.	11.50	1.15

Regarding the programme for next year's work I would submit that the experiments commenced for testing varieties of grains be continued in order that, through a number of years' trial, a proper average of results may be obtained. It would be well also to try the different clovers as these have such an important bearing on agriculture.

Alfalfa.

It is regrettable that the experiments initiated with a view to testing alfalfa did not yield any tangible results. Sufficient seed for a two acre plot has now been procured from reliable sources and it is the intention to repeat the experiment during the coming season. No attempt will, however, be made to test the efficacy of seeding with a nurse crop, as it would now appear to have been conclusively demonstrated that this system is not calculated to give the most satisfactory results. Alfalfa should not be seeded down in loose, freshly ploughed ground; care should be taken to have the soil thoroughly settled after ploughing and the surface diligently pulverised by cultivation. Deep ploughing and thorough harrowing are required.

It cannot be disputed that it is, at least, problematic whether common alfalfa or lucerne can be successfully grown in the Territories, or rather whether it will withstand the winters. A newly introduced variety of alfalfa has, however, been extensively tested during the past couple of years all through the United States. I refer to Turkestan alfalfa. In the report of the Wyoming Agricultural Experiment Station it is stated that Turkestan alfalfa proved a specially hardy variety having withstood the winter of 1898-9 apparently without winter killing, while all plots of common alfalfa were more or less injured.

The Division of Agrostology of the United States Department of Agriculture conducted, a year or two ago, a very extensive scheme of co-operative experiments in grasses and fodder plants, and amongst them Turkestan alfalfa. The following report from Flathead County, Montana, is of interest:

The soil was very light, sandy, and open, varying to a black, sandy loam. The land was ploughed thoroughly, harrowed, then rolled and harrowed again. The seed was sown broadcast and the land then smoothed with a harrow and rolled. It came up May 18, and was in full bloom by July 28. The crop was cut with a mower along with the weeds. So far as the experiment has gone it is very promising. I think the alfalfa has done remarkably well for the first year. The season was very hot and dry, with no rain after June, but the drought did not seem to affect it. It was about fourteen inches high on July 28, 1898. The winter of 1898-99 was very severe, but none of it was winter killed. The fore part of the season of 1899 was very dry, but a great deal of rain has fallen since August 1st. The plot of Turkestan still continues to do well. It was pastured by hogs till May 28 and then let go for seed. It made a great growth, but did not fill well, the cold weather probably preventing the production of seed. After cutting, the alfalfa grew up again rapidly. I think it is going to be more valuable than the common variety. It seems to do well on alkali spots. I would advise all to sow it as soon as they can secure seed.

Some four or five other correspondents reported unanimously in favour of this plant for that State.

It is of great interest to note the following estimate of Turkestan alfalfa by Prince Massalski, of the Russian Department of Agriculture :

Lucerne clover (*Medicago sativa* var. *Turkestanica*), is the chief fodder product in use throughout Central Asia, and to the settled population of Turkestan is of the highest importance, since during the summer it forms the chief, and in the winter, prepared in the shape of hay, the only fodder for cattle. It is of all the greater importance because within the region populated by settled inhabitants there are no meadows. Soft herbs and other grasses that grow up in the early spring in certain parts of the steppes are quickly dried up by the hot rays of the sun, and give place to coarse, prickly stubble, or in any case to less nutritive grasses, that are in general unfitted for sheep, camels or steppe cattle, and still less fitted for horses or the cattle of those who are settled in the oases, and are thus closely confined to the forelands or rivers, and in most cases are far removed from the steppes. The native lucerne would seem to be a cattle fodder that cannot be replaced in countries so dry and so hot as Turkestan and the Transcaspian province. Experiments have shown that native lucerne, particularly where there is a lack of water, is vastly superior to the French in the crops it will yield, and that it is able to grow satisfactorily with a minimum supply of water, a supply so small that European lucerne would perish from drought. This peculiarity of the native lucerne is to be explained by its peculiar formation. It possesses a very large root system, and its leaves are covered with thick down; this, in conjunction with a deep cut orifice on the leaf, enables the plant on the one hand to imbibe the moisture from the deeper layers of the soil, and on the other hand to exhale it in a very small quantity.

Malting Barleys.

Before the occurrence of a destructive hail storm, which did considerable damage to crops in the Calgary district, the varieties of Montana Barley, the seed of which was procured last year through the courtesy of Professor R. S. Shaw, of the Montana Agricultural Experiment Station, made a most promising growth and it is beyond doubt that the final yield would have been excellent had not the crop been injured in this manner; the quality, however, is admirable and, as sufficient seed was saved to sow a fairly large area, I would strongly recommend that six to eight acres be put in during the coming year in order that a considerable crop may be raised for sale at a nominal figure.

Fall Wheat.

It seems likely that this cereal will play an important part in agricultural operations all through the westerly portions of the Territories. The Calgary Board of Trade and the Canadian Pacific Railway Company took active steps during the year to have fall wheat seed introduced in

Alberta, agreeing to supply at cost price all persons who applied for it. Probably the first settler in the Territories to experiment with fall wheat was Mr. C. Kettles, of Pincher Creek. The following statement from him is, therefore, of considerable interest:

I have been growing fall wheat with unvarying success for the last ten years, having threshed from 40 to 63 bushels per acre, according to the season.

My custom has been to summerfallow the land, ploughing deeply in June, cultivating weekly with a disc harrow afterwards. I sow between the middle of July and the middle of August, so as to get a strong growth and a good root. I find it makes no difference whether we have snow to cover it or not, as the rank growth of wheat itself is sufficient mulch.

I favour eating it down a little in the fall if it is altogether too high, and in fact, it is surprising how much eating down it will stand and still make a good crop, but I think if it is eaten down to the ground it will not give so large a yield nor ripen so early. It ripens between the 20th July and the end of August according to the season. I have never treated the seed with any kind of smut preparation, yet I have never seen a grain of smut although spring wheat grown in the same field alongside has been half or more smut. I find Dawson's golden chaff to be the best variety for this country.

I have experimented thoroughly with fall wheat and find it to be the safest, hardiest and surest crop we can grow in this district, as well as giving the greatest yield and being entirely free from smut. Besides, it gives the farmer a further advantage in the way of time, and is a sure way of cleaning weedy, dirty or worn out land. The ploughing and seeding being done after spring crops are in and before haying commences, gives him time to haul his manure and clean up generally. In fact, I cannot over recommend it.

Speltz (Emmer).

Although the result from experiments at Calgary with this crop during the past year cannot be estimated with certainty it was evident, before the occurrence of the hail storm, that the yield would have been of a very satisfactory nature.

Speltz may be described as a simple, erect, smooth annual, two to three feet high, spike short, compact and two to three inches long, spikelets two rowed, the glumes smooth, naked, slightly keeled, with a short, blunt middle tooth, outer flowering scale provided with an arm, two to four inches long.

Recent feeding experiments have not established that this grain is superior to barley for feeding purposes. One Manitoba farmer, however, states as his experience that one bushel of speltz is worth two of oats for horse feed. Speltz is essentially drought resistant, and herein lies its superiority to other coarse grains for certain portions of the Territories. It has for years been grown exclusively in the northerly portion of South Dakota, where large Russian settlements were established. At the Indian Head Dominion Experimental Farm it has not until recently realised the expectations formed regarding it. As might be expected, it has been grown more successfully in the more sandy soil of the Brandon Experimental Farm. The following is a comparison in yield per acre by Superintendent Bedford, between Speltz and other grains at the latter point:

Kind of Grain.	Weight of Grain per acre.
Speltz	3,080
Mensury barley	2,320
Red fye wheat	1,720
American beauty oats	2,320

In 1900, when all other grains were more or less of a failure in the Province of Manitoba owing to drought, speltz averaged 1,750 lbs. per

acre on a farm in Wallace municipality, against 600 of wheat. A number of cases are on record where this grain yielded from 60 to 90 bushels (of 48 lbs.) per acre on Manitoba farms. Speltz should not be sown after the first week of May; it appears to take a little longer than oats to mature.

Flax.

Experiments might with advantage be conducted in order to ascertain what possibilities are in the way of flax growing in the irrigated area of Alberta and elsewhere in the Territories. Wild flax is a native and grown in great abundance all over the Territories, and it would appear that our soils and climate would be favourable to producing the improved variety. Flax is extensively grown in the Province of Ontario chiefly, however, for fibre, while in the Province of Manitoba it is cultivated entirely for seed. In the latter province Messrs. J. J. Livingstone & Company, of Baden, Ontario, manufacturers of oils, were intimately connected with its introduction through the Mennonite settlements in south-eastern Manitoba. It is probable that the growing of flax for fibre will hardly be feasible in the West. It is generally supposed that a fairly humid climate is desirable to bring the fibre to perfection, but it ought to be a very paying crop for seed. A distinct advantage in connection with flax is that good crops may be raised on new breaking, which would be an important consideration in new settlements. This crop is at present fairly extensively grown, with great success, in the Rosthern district in Saskatchewan and at a number of points in Alberta.

Marked quotations at Winnipeg during the past year reached \$1.25 per bushel and \$1.15 was readily paid at country points at any time. That the demand is growing steadily is evident. The value of flax on United States markets has increased from 63 cents per bushel in 1896 to \$1.70 in December last. That this increase in value has not been brought about by any decrease in supply is evident from the fact that the crop in the United States for 1896 was only some 17,000,000 bushels, while in 1901 the production reached about 30,000,000.

There has always been a feeling of apprehension on the part of farmers for the growing of flax, owing to its supposedly soil exhausting nature. Recent experiments in the United States have, however, quite proven that this idea is not well founded. While there appears to be a serious objection to following flax with flax on account of the harmful principles developed by the leaves, roots and stubble from the previous crop left on the land, a succeeding crop of any other nature should not show any evil effect from the flax. The following letter, which appeared in the "St. Paul Farmer," is of interest:

My plan of seeding is first harrow the ground well before putting any seed on. I then sow flax broadcast. I aim to sow about one peck of flax per acre. I follow this with five inch shoe drill and sow one bushel and one peck of wheat per acre. The work of the drill will cover flax sufficiently. Of course, a light harrowing will do no harm. The main object in this plan of seeding is to have flax broadcast and wheat in rows, and one kind of grain does not crowd the other. The flax simply occupies space that would otherwise be supporting a growth of weeds of various kinds. The last year was a very bad one generally for small grain in the locality, nevertheless I harvested a crop of four and one half bushels of flax per acre and eighteen bushels of wheat where I had the two sown together, and not over ten bushels of wheat where there was not flax sown with it.

Our grain inspectors receive the mixed grain just as it comes from the threshing machine. They take a sample and screen it and determine the per

cent. of each, flax and wheat, and pay for each separate according to prices. I sold for \$1.15 per bushel. It is readily seen that my flax crop alone netted me \$5 per acre, to say nothing about the wheat being better where the two were sown. It cost me four cents per bushel for threshing, same as was charged for threshing clear wheat. I believe that farmers can materially increase their income by sowing flax with wheat in this manner.

Experiments have been conducted both at the Brandon and Indian Head Dominion Experimental Farms for some years, which go to show that flax is in most years a very paying crop in the West. The extensive growing of flax, moreover, would soon lead to the establishment of local industries useful in the highest degree from an agricultural standpoint. An ever increasing quantity of linseed oil is used in the Territories and the by product from its manufacture, oilmeal cake, would be a valuable feed in the hands of farmers in the dairying and stock feeding districts of the Territories. A single bushel of seed produces about 21 lbs. of oil meal cake, containing in the neighbourhood of 8 per cent. oil. Nearly one-third of the cake is composed of protein.

BEET SUGAR PRODUCTION.

A report upon the agricultural progress of the Territories during the past year would be incomplete without some reference to the important matter of beet sugar production. It is unquestionably a fact that we are at present on the eve of most important developments in this direction. To Mr. Jesse Knight, late of Utah, U.S.A., who has embarked upon such an enterprise on a very extensive scale, belongs the honour of having performed the pioneer work in the Territories in the way of beet sugar manufacturing. Early in the year the town of Raymond was established in the Lethbridge District by Mr. Knight. A beet sugar plant has been installed at that point and a large area of land divided into ten acre plots whereon three hundred Mormon families will at once be placed. The whole area is under irrigation from the Canadian North-West Irrigation Company's system.

The benefits to be derived by any community through the establishment of a beet sugar factory, with particular reference to conditions as they exist in Montana, which are more or less identical with our own, at least of the south-westerly portion of the Territories, are well set forth by Professor Emery, the Director of the Montana Experiment Station, in the following extract from a report upon the subject:

Montana consumes 10,000,000 pounds of sugar per annum, and there certainly would be market for this amount, as our people are growing rapidly to a proper appreciation of supporting a home industry. We are on a main line of railway between the coast and the great inland lakes, in which territory there is at present no other home production of sugar to be considered as competition. If given a fair show by the transportation companies, as it would no doubt be, there ought to be a market along the line of the Northern Pacific Railway for the product of a first class plant located in Montana.

Montana ships 250,000 beef cattle to eastern markets each fall. These could, with great profit, be fed in the state (or half of them, at anyrate) with a combination of grain and alfalfa with the beet pulp. This would have a beneficial effect upon the cattle market. This State is also the leading sheep state of the Union, and there is a very strong call on the part of sheep men for mutton sheep to cross upon the fine wool flocks now universal in the state. Many thousands of sheep are winter fed on alfalfa for mutton. Here, then, would be a way to help out both the flock master and the farmer by supplying this valuable accessory to the feed ration.

Dairying is yet in its infancy, and it would receive substantial aid by the establishment of a sugar plant.

Industries of this nature bear much promise in Montana. We have facilities and reserves here to comfortably maintain and support a population exceeding that of any of the older states at present, and this development to come offers much to insure a permanency of market.

The feed value of beet pulp, the by product of sugar manufacturing, is very considerable. Although few practical experiments have been made to determine the exact value it has been estimated that four tons of beet pulp is equal in feed value to one ton of good alfalfa hay. The value of beet pulp is somewhat improved by souring and it is considered a better feed for stock than the whole beets themselves, owing to certain foreign salts having been washed out in the process of manufacture.

The future which lies before this industry is such that the question of over production in Canada need hardly be considered. The average annual consumption of sugar in Canada for the last ten years is not very far below 150,000 tons. The United States in 1889 consumed over 2,000,000 tons. It is of interest to note that the world's production of cane sugar is somewhere about 2,850,000 tons per annum, while the manufacture of beet sugar now reaches about 6,000,000 tons. The beet sugar factories in operation in the United States have a daily capacity of 22,000 tons of beets and they are being extended and added to at a rapid rate. After one or two refineries have been in operation in the Territories for a short time the farmers will quickly appreciate the enormous advantages of such enterprises in their midst, will make a special study of the problem of successful beet growing, and acquire the appliances necessary for the most economical cultivation of beets.

The great obstacle to the extension of sugar beet growing in the westerly portion of the continent of America has in the past been the amount of hand labour required and the expense of hired help. This problem is, however, rapidly being solved by the invention and introduction of labour saving machinery. It will be of interest here to outline briefly the routine of cultivation. It is of importance that the system of cultivation should admit of the ready penetration of the tap root. It is essential that the beet should grow under the soil as much as possible, as the portion protruding above the ground may be considered almost completely valueless. The soil is usually ploughed to a depth of about eight inches. In some cases the plough is followed by a subsoiler, or has a subsoil lance attached to it, which loosens up the earth to the extent of an additional six or eight inches. After ploughing the land is subjected to diligent surface cultivation. It is now ready for seeding and improved machinery is available for this task. Some of these implements have special arrangements for sowing the seed in ridges and others for planting them on level ground, the latter is generally adopted south of the International boundary. It is usually more economical to use a four row seeder, which can be regulated with a great deal of precision. The quantity of seed to the acre runs between fifteen to twenty pounds. Growers of beets on a large scale find it profitable to obtain what is called a "full set of tools." Some agricultural implement companies make a specialty of manufacturing complete machinery for this purpose and supply them at a reasonable cost. With the complete set of tools made to the same scale, the work of cultivating becomes so much easier as the distances between the rows are equal and, if four row tools are used, deviations from the straight line in one row will naturally have the same result on the other three. The first cultivation is done with the "goose foot" small ploughs or knives attached to the cultivator. The

edge of the knives runs within a couple of inches of and on each side of the best plants in each of the four rows, the side next to the beet presenting a square surface. The cutting part of the foot runs from one half to an inch below the surface and parallel to it. The soil should not at this stage be stirred to any great depth, the object being rather to destroy the weeds and breaking up the crust of the soil. For later cultivations the "bull tongue" is substituted for the goose foot knives, which cultivates to a depth of from three to six inches. The next task is the thinning and bunching of the beet plants, which is proceeded with as soon as the beet shows four leaves. I am under the impression that machinery has lately been invented which thins the plants down to bunches of a dozen or more. The usual practice is for one person to go along each row with a sharp hoe and cut out most of the superfluous plants. He is followed by another who does the thinning. This latter operation involves crawling along the rows on hands and knees, selecting the most thrifty plants in a bunch and pulling out the remainder with a quick movement of the hand. This is the most labourious feature of sugar beet cultivation, but the work can readily be done by children or the cheapest class of labour available.

It is very important to keep the soil thoroughly stirred during the growing season by frequent cultivations. As soon as the outside leaves take on a yellowish tinge and droop towards the ground, the beets are ready for harvesting, which is accomplished by means of a special implement. There are a great many contrivances of that sort on the market. One is a long slender plough, with a sharp ploughshare, which is run close to the beet so as to admit of the share cutting the taproot just below the enlargement of the beet. Another harvester is provided with a double prong implement which is run on either side of the lower portion of the bulb, breaking the taproot and forcing the beet out of the ground. Following the plough are persons who pick up the beets and with one stroke of a knife cut off the crown, including that portion of the beet which is grown above the ground, together with the leaves. This is called "topping."

An impression used to prevail in Europe that sugar beets could not be grown successfully under irrigation. The idea has, however, been effectually exploded by practical experiments conducted in the irrigating States of the Union. It cannot be denied, however, that care must be used in the application of the water. Experience has amply demonstrated that where a spring rainfall can be counted on sufficient to germinate the seed and give the plant a fair start, the most successful results are attained by irrigation at a later stage of the growth. In any event irrigation should be held off as long as possible. The sugar beet is a deep feeder and, in view of the importance of a lengthy taproot, it is evident that a plentiful supply of water is to be avoided in the early stages of the growth so as to encourage the beet to penetrate deeply for moisture. The following remarks on this subject by the late Director of the United States Beet Sugar Experiment Station in Nebraska are of peculiar interest:

The experience of more than ten years in California has shown that the climatic data, regarded as of prime importance in beet culture in Europe, can not be regarded as rigidly applicable to this country. The successful growth of sugar beets in the arid regions of our country, with and without irrigation, has introduced a new factor into the science of beet meteorology. While the arid area on which beets can be grown without irrigation is probably confined almost ex-

clusively to the coast valleys of California, the successful commercial production of sugar beets in Utah and New Mexico has opened up a new and extensive field for the extension of the sugar industry over large areas suited to irrigation in the western and southwestern regions of the United States. It is certain now that Colorado, Utah, New Mexico, Idaho, and Arizona may become great sugar producing States, not including other areas in the arid region. California has already set the pace of progress, and the other arid States will not be slow to follow. The high cost of good irrigation renders it imperative that the areas under culture be devoted to a crop which is capable of producing a more valuable yield than is afforded by cereal culture. Of all the home markets for our domestic agricultural products, there is none so insistent nor so expansive as that for sugar. With an annual consumption of 2,000,000 tons, and with a certainty of rapid increase, the demand for sugar promises to be the salvation of American agriculture.

Some interesting data have been collected with a view to ascertaining the cost per acre for producing beets. The Division of Chemistry of the United States Department of Agriculture gives the following estimate from which, however, has been deducted the rent of land, which is a mere nominal quantity in the Territories, also the charge for fertilizers, which are not required here. The estimate is made on a basis of labour calculated at one dollar per day :

Ploughing, subsoiling and preparing for planting.....	\$ 5.00
Cost of seed.....	2.25
Planting.....	1.75
Hoeing and thinning.....	6.00
Cultivating with horse hoe five times.....	5.00
Harvesting.....	5.00
Topping.....	12.00
Total.....	<u>\$37.00</u>

The following is an estimate published in the *Prairie Farmer* of Nebraska, compiled from carefully prepared notes, made by one of the most painstaking farmers in the State, concerning the total cost incurred on a plot of five acres :

Fall ploughing, at \$1 per acre.....	\$ 5.00
Ploughing in spring, at \$1.25.....	6.25
Rolling twice, once before and once after planting.....	1.50
Planting by hand, at 75 cents per acre.....	3.75
Cultivating with hoe at 75 cents per acre.....	3.75
Hoeing by hand three times and weeding necessary at time of hoeing.....	90.00
Thinning, at \$10.....	50.00
Cultivating by horse twice at 75 cents.....	7.50
Running over with hoe to clear from remaining weeds...	3.75
Total.....	<u>\$171.50</u>

From the above data it may safely be concluded that beets can be grown in the Territories at a cost of less than \$40 per acre, allowing current rates of wages.

While on the subject of cost of growing sugar beets per acre, the question of yield may appropriately be considered. While there are no records available of systematic experiments in the Territories, a fair idea of what may be expected can be gained by studying results in the United States. The State of Oregon organised a scheme of co-operative

experiments covering every district of the State. Other things being equal, this system of experimental work ought to give the most reliable and useful data, in the first place because it covers every section of the country and would, therefore, give an approximately correct average result; and, secondly, because the experiments were conducted under quite ordinary farming conditions and equal results should consequently be within the reach of every farmer. The average crop in 1892 was 20.5 tons per acre and in 1893, 23.2. It is generally considered that 15 to 16 tons per acre is a fair crop. In the State of Washington co-operative experiments have also been carried on showing a considerable variation in yield. Up to 32½ tons per acre were produced by actual weight. The lowest in 1896 was about 18 tons. Intimately connected with the cost of production and yield per acre is the question of the value of the crop. In this matter also we must go to the United States for information. In the State of Minnesota a minimum rate of \$4.25 per ton for beets testing 15 per cent. sugar has been established by law. In many States \$5.00 per ton is paid. With the enormous market available in British Columbia and in the Province of Manitoba, where experiments with sugar beets have not so far given encouraging results, as well as the local demand, Territorial beet growers may confidently expect to receive the highest figure.

A few remarks as to the adaptability of the Territories for beet sugar production are now in order. One of the most important desiderata is cheap fuel. Very few countries can compete with the Territories in this respect. Coal is found everywhere, at least in districts where beet sugar growing is likely to be prosecuted on a large scale. Suitable limestone deposits are also available on the eastern slope of the Rocky Mountains. The most favourable soil for beet sugar production is conceded to be a soil which carries a generous quantity of sand. A clay soil with a tendency to bake is the most unfavourable. In almost every portion of the Territories the former class of soil predominates. It is also a well known fact that the farther north the root can be successfully grown, other things being equal, the better the result. The immediate reason for this is that the long cloudless days of northerly latitudes increase the activity of the chlorophyll cells of the beet leaves, which elaborate the sugar, so that a greater quantity of sugar may be made in proportion to the area of leaf surface.

The ability of the Territories to grow sugar beets successfully is not, however, at all a matter of conjecture, at least not so far as Southern Alberta is concerned. During the early portion of the year a shipment of beets grown under irrigation in the Lethbridge district was sent to one of the largest sugar factories in Utah for polarisation. Although they arrived in rather a poor condition, being covered with a heavy mould, the test was particularly satisfactory. The following was the result:

No.	Avr. Wt.	Brix.	Sugar in juice	Sugar in beet	Purity	
1	10.2	21.6	18.3	17.2	64.3	Magrath
2	10.2	23.2	19.2	18.1	82.6	"
3	12.6	24.0	19.1	18.0	79.6	"
4	14.3	25.1	22.4	21.1	89.2	"
5	14.4	21.6	18.3	17.2	84.7	"
6	13.2	19.9	16.1	16.1	80.9	"
7	22.0	23.0	16.2	15.0	78.7	"
1	4.6	26.3	22.6	21.2	82.1	Stirling
2	12.4	27.0	15.5	14.6	74.9	"
3	6.0	28.8	23.7	22.3	84.0	"
4	12.3	27.0	21.9	20.6	81.1	"
5	14.6	28.3	22.6	21.3	79.8	"
1	9.0	29.1	22.5	21.2	77.3	Lethbridge

It is generally considered that the purity should not run lower than 80 per cent., which is the factory standard, but in this case, where such purities go below 80 per cent., it is due to the fact that the beets were somewhat dried *en route*.

The contents of sugar in beet, as will be noticed, is remarkably high, reaching in one case 22.3 per cent., while several samples tested over 21 per cent. It may here be mentioned that the average percentage of sugar in beet in connection with a series of analyses of Montana grown beets in 1898 was only 11.2, while the total average for Montana analyses for 1897, 1898 and 1899 was 12.1; even Utah, one of the best sugar beet producing States, was only 14.3 for the above mentioned period. It may, therefore, be safely concluded that the Territories possess unequalled advantages on the score of the quality of the beets which can be produced.

The question of purity is a very important one. The "coefficient of purity" is arrived at by ascertaining the percentage of sucrose (crystallisable sugar) in the solids of the juice. Each pound of foreign matter, not sugar, prevents at least one pound of sugar from crystallising. It is, therefore, evident that manufacturers must have beet roots carrying not only a high percentage of sugar but also with a satisfactory coefficient of purity. It is generally considered that immature beets, those grown on soil rich in vegetable matter, or which has been generously fertilised with fresh barnyard manure, are liable to carry a great deal of solid matter, not sugar, in the juice and are consequently not sought after by the manufacturers.

The areas of successful beet sugar culture are, as a rule, sharply defined. We are at present absolutely at sea as to what the North-West Territories, as a whole, can do in this direction. In isolated localities tests, more or less reliable, have been conducted which, however, have only in one case been followed up by an efficient chemical analysis. In view of the developments of the beet sugar industry all around us, in the States of Minnesota, Dakota, Montana, Oregon and Washington, as well as in the Provinces of British Columbia, Ontario and Manitoba, where extensive co-operative experiments, under the auspices of the local governments, have been persistently conducted for some years, it would appear that steps could with advantage be taken at an early date to carry out a scheme of co-operative experiments, embracing every locality of the North-West Territories, with a view to defining the areas where

beets of the required sugar contents and coefficient of purity can be produced, and where the yield per acre would be sufficiently large to render the growing of this crop a profitable undertaking for the farmers to engage in and warrant capitalists in establishing factories. This is a matter which might be taken in hand by the proposed Agricultural Experimental Union referred to elsewhere in this report.

NOXIOUS WEEDS.

The benefits derived from the enforcement of The Noxious Weeds Ordinance appear to be appreciated by the public, if the demands for additional inspectors is any indication. The number of local inspectors has been increased to thirty-three, of whom twenty-three have worked in Assiniboia, six in Saskatchewan and four in Alberta. Weeds were destroyed on unoccupied lands at a cost of about \$650.00, being an increase of \$110.00 over last year's expenditure for the same purpose, principally due to a more favourable season for growth. It may be expected, however, that the area of abandoned lands on which work has been found necessary in the past will rapidly decrease in sympathy with the large volume of settlement now coming in. By arrangement with the Canadian Pacific Railway Company the Department undertook the destruction of weeds on abandoned lands belonging to that corporation. Accounts were rendered for \$227.62, for work performed on thirteen places.

Owing to the fall of 1900 being very favourable for the germination of weed seeds it was thought necessary that the inspection work should begin somewhat earlier than has been customary, especially in such districts as were known to be infested with stink weed, in order that such weeds as had begun their growth in the fall might be attended to before the seed ripened. With this end in view inspectors in certain districts were instructed to commence work on the 20th May, making a flying trip through their districts, paying particular attention to places where they were aware stink weed had gained a foothold. Delay was incurred in a few cases owing to the resignations of such officers necessitating the filling of vacancies. Those who made the early trip reported good results from it.

With few exceptions the inspectors have done very satisfactory work in the face of great difficulties and discouraging circumstances. The importation and movement from one district to another of dirty seed grain and the neglect of weeds on the railway right of way, occasioned by the strike of the section men, were the most difficult features of the season's work. The practice on the part of the railways of ploughing firebreaks only when most convenient, in some cases dividing the work over two years, ploughing only half the width one year and the balance the next, does not tend to prevent weeds from spreading and should be discontinued.

In order to promote the educational side of the weed work of the Department Prof. Fletcher's services were again secured for a series of meetings in Northern Alberta, which he attended in company with Mr. Angus Mackay, of the Indian Head Experimental Farm. Instructive and interesting addresses were delivered by these gentlemen to apprecia-

tive audiences, although bad roads and stormy weather prevented many from attending. The meetings were as follows: Olds, Innisfail, Red Deer, Lacombe, Ponoka, Wetaskiwin, Leduc, Strathcona, Clover Bar and Fort Saskatchewan. It will be seen by reference to the report of the Chief Inspector of Noxious Weeds, which is herewith presented, that he also addressed a large number of meetings on the subject of noxious weed eradication.

The demand has been very large for the new Noxious Weed Bulletin No. 3, issued early in the summer. Some 5,000 copies of this publication have been distributed and they appear to meet a popular want. This bulletin contains nineteen illustrations of weeds, the nature and destruction of which are dealt with thoroughly in the text; the Ordinance respecting noxious weeds is reproduced in consolidated form and some space is given to the subject of poisonous plants and remedies in cases of poisoning of livestock by such means. A few pages are devoted to information and formulæ for the prevention of damage by insects. This latter is a matter which is rapidly claiming the attention of the Department.

From the report of the chief inspector on the inspection of elevators it would appear that any improvement in the handling of screenings is due more to the interest which may be displayed in the matter by the person in charge than to any effort on the part of elevator owners to cope with the question of how to deal with this waste product in the best manner. Action was taken against thirteen persons for neglect to comply with the provisions of the Ordinance. Convictions were secured and fines imposed in nine of these cases.

Some sixty farmers were directed to burn their straw on account of the prevalence of noxious weeds in their fields, and one was compelled to plough down a portion of his crop.

Report of T. N. Willing, Chief Inspector of Noxious Weeds.

I have the honour to report that, as in previous years, my first field work was visiting the districts where inspectors had been recently appointed. On the 27th May I left Regina to meet and instruct the new appointees on the Souris line, meeting Inspector T. McGregor and Inspector Brokenshar at Carnduff. I drove with the latter gentleman to Oxbow and was there met by Inspector Trustcott, with whom I spent some time north and south of Alameda; near this point I was shown a field of stink weed which was just turning yellow, but although winter annuals were so far advanced, annuals were barely showing because of the dry spring.

After devoting a week to the Souris district I went north to confer with Inspectors McKinnon, of Fort Qu'Appelle, and Seymour, of Strathcarroll, with whom I drove to several very dirty and badly neglected farms in the district. One which came under my observation was a good example of how a little neglect may undo or nullify a lot of good work. This farm had been rented for a number of years, and had, as is not unusual in such cases, become foul with stink weed. In 1900 the place was efficiently summer fallowed, but the wet fall caused seeds to sprout and there was a sufficient growth to ripen early this season, and this crop of stink weed shed seeds enough to more than replace what had been destroyed the year before. Now, if a cultivator had been worked

over this place in the spring, while the weeds were still young; or if, before there was a sign of seed pods, the mower had been used, there would have been a fairly clean field fit to take a good crop off. Here, as in other districts in Assiniboia, the small wall flower, *E. Parviflorum*, a native biennial, has this year become unduly prominent, giving a yellow colouring to many a field. This has been due to the wet fall having been favourable for growth from seed on summer fallow and on stubble. Other weeds of the same habit of growth, such as the blue burs (*Echinospermum Lappula* and *Redowskii*), have also been very abundant. A great deal of good was done on some farms in this district by running a mower over the wheat, which was still short, thus cutting the heads off the weeds. The caterpillars of the thistle butterfly, *P. cardui*, were extraordinarily numerous and did a vast amount of good by feeding on the burs as well as on sage, nettles and their favourite food, the thistle. I also observed the red turnip beetle, *E. adonidis*, feeding in abundance on tansy mustard and pepper grass in lieu of the more succulent turnip leaf. Stink weed is evidently the weed against which a special effort must be made in the Fort Qu'Appelle district, and extreme diligence will have to be exercised by the overseers in keeping it off the roads if headway is to be made against it.

Early in June I joined Inspector Sahlmark at Ohlen. I noticed that a number of fields in his district, which had been haled out last season, had volunteer crops of grain in which tansy mustard and shepherd's purse were very prominent. Between Ohlen and Churchbridge crops were rather backward, but not so the biennial weeds. Some stink weed was seen on abandoned places where buildings had been.

I next proceeded to Yorkton, where I had arranged to meet Inspectors Duff and Healy. I visited the worst places in the district and found that most crops were plentifully besprinkled with green and gray tansy mustard and a lot of wall flower and blue bur, but here an interest seemed to be taken in their destruction. On one place I found a farmer had a Galician walking ahead of his plough pulling stink weed.

While on my way to Carlyle, *via* Portage la Prairie, I had an opportunity of looking at the weed burning engine used on the railway. It may be a great saving of labour to the trackmen, but it will not to any extent lessen the danger of weeds spreading, as the road bed only is cleaned, while it is on the sides of the dump that weeds are more often neglected and allowed to ripen their seeds.

Near Antler, on the Pipestone Branch, I found some of the crops well advanced but a number of fields were so smothered with pepper grass that nothing else could be seen. Stink weed and hares ear mustard were noticed on railway sidings. From Carlyle I drove about with Inspector F. Davies, a recent appointee. The crops looked well where they had been given a reasonable chance, but the stubble sown fields were very dirty with all kinds of native growths, including grasses and noxious weeds. Near the track at Arcola, where imported seed grain had been unloaded, I found wild oats, wild mustard and other noxious weeds growing.

Driving to Weyburn, I found that the most noticeable weeds were green and gray tansy mustard, wall flower, pepper grass and spearleaf goosefoot. Acres of ripe whitlow grass appeared on the prairie and a good deal had seeded down in crops. This is the first season in which the Weyburn district has been inspected and the work has not been

begun any too soon. With Inspector Partridge I looked over a large number of farms, and found that almost without exception the crops sown on stubble were overgrown with brush, weeds, wild flowers and grass. The biennials such as wall flower, blue bur, tansy mustards and pepper grass were abundant, and hare's ear mustard, tumbling mustard, stink weed, shepherd's purse and cow cockle were by no means scarce in some crops. Couch grass and spear grass were plentiful throughout the crops, as well as spear leaf goosefoot. A number of farmers in this settlement assured me they did not intend again to sow on stubble. Some were breaking deeply intending to crop without back-setting, the previous year's results from this method having been satisfactory. The dirtiest fields were owned by absentees.

Acting on instructions I went north from Moose Jaw to inspect the E. $\frac{1}{2}$ 4-19-26. I found the roadway very dirty with stink weed, hare's ear and other mustards and it looked as if no attention at all had been given to this matter by the Local Improvement Overseers. There are a number of very dirty farms in this district. Stink weed was even growing on the unbroken prairie. The section to be inspected contained a little less than 200 acres and had been at one time under cultivation. A small area only was under crop now by a tenant, and the balance, which had been left in very rough shape, was overgrown with grass, stink weed, shepherd's purse, hare's ear and tumbling mustard and blue bur. The stink weed and hare's ear mustard were ripe, or nearly so.

Before leaving for Saskatchewan I drove through a portion of the Regina district and was somewhat impressed by the quantities of noxious weeds growing by the roadsides. Here a patch of Canada thistles, there some tumbling mustard, or stink weed or hare's ear mustard. The blue bur and wall flower were conspicuous on many a field, where might also be seen wild mustard, false flax and tansy mustard, or quantities of those already seen on the trails. In some cases it was the intention of the owners to destroy the weeds, but they were being left too long before cutting.

At a number of points along the Prince Albert line I saw Canada thistles on the right of way. I spent a couple of days in the vicinity of Saskatoon, with Mr. J. A. Smith, who had recently been appointed inspector, and found farms fairly clean. I noticed, however, that some farmers were far too late with their summer fallowing. Shepherd's purse, false flax and ball mustard were somewhat prevalent and blue bur was abundant.

I met Inspectors Plaxton and Moberley at Prince Albert and, after instructing them in their duties, I drove through the district. The rains made the roads bad and weed work was difficult both for farmer and inspector, but it seems that interest is being taken in the work and good results will soon show.

After I returned to Regina I spent some profitable days in the district with Prof. Fletcher, who was on his way west to address meetings in Northern Alberta. I visited Central Alberta in July and drove through the Sprucevale district, west of Calgary, where there was hardly a farm but what had stink weed. There was also a good deal of hare's ear mustard and ball mustard, false flax and shepherd's purse to be seen. After arranging for a meeting to be addressed by me at the Sprucevale School house on 23rd July, I returned to Calgary and crossed the Bow River where I inspected a number of farms toward Shepard. On many places

stink weed had quite a hold and hare's ear mustard, ball mustard, false flax, shepherd's purse and other noxious weeds were prevalent to such an extent that few farms were without them. Undoubtedly local inspectors are needed in the vicinity of Calgary, as many of the farmers there do not seem to realise the need for vigorous action against the weeds.

I found about a quarter of an acre of stink weed within a very short distance of Olds. The owner of the property did not know of the existence or nature of this weed, but promptly destroyed it upon being told. In this district, the season being cold and wet, few weeds showed in the crops.

After seeing Inspector Foster at Strathcona, and attending the institute meeting there, I accompanied Dr. Fletcher and Mr. Angus Mackay to the other points in the Edmonton district at which they were to speak, viz: Clover Bar, Fort Saskatchewan and Leduc. The roads were almost impassable in places and conditions were anything but favourable for large audiences at the meetings. However, some of these were well attended and a keen interest was manifested in the subjects discussed. While in the north several severe hail storms occurred injuring a number of the crops, but those not thus affected seemed well advanced and much more free of weeds than during the previous season. I left Leduc on the morning of the 23rd for Calgary and on arrival gathered a supply of weed specimens and drove to Sprucevale, where about twenty of the farmers had assembled to meet me. Most of them had weeds to enquire about, which were growing in their fields. The following were laid on the table: Stink weed and shepherd's purse; hare's ear, ball, tansy and wormseed mustard, spear leaf goosefoot, willow herb, and night flowering catchfly, which latter was said to be very plentiful in one field. The following day I drove out to Shepard and held a meeting in the evening at the schoolhouse as advertised. Only a few persons appeared, to whom I distributed bulletins and talked on the destruction of weeds.

From the train, between Calgary and Macleod, Canada thistles could be seen by the track at Okotoks and Nanton. In gardens at Macleod the potato beetle, *D. Decemlineata*, was found. It seems that this insect is somewhat prevalent throughout the southern part of Alberta, as I have now seen it several years in succession at various points in the pupal and mature stages.

I spent some days in the Pincher Creek district. A number of fields under crop contained stink weed and other noxious weeds, and I noticed Canada thistles growing thickly at the Cowley railway siding. This district should be provided with an inspector. Even on the large ranches, I observed acres of stink weed about the corrals and pasture fields, wherefrom it is carried on the feet of horses and cattle for miles over the prairie to seed down land, which may at no distant date be brought under the plough. It is a question to what extent ranchers leasing land should be held liable for the irreparable damage done by the introduction of foul weeds. I visited many farms toward Fishburn and also south and west of Pincher Creek, finding an abundance of wild oats, false flax, ball, hare's ear and other mustards, and stink weed. The dirtiest place that I saw was what is known as the "Old Government farm," which had all of these. On a roadway, and in an adjoining field within a very short distance of town, a large patch of Canada thistles was in bloom, so I gave instructions for their destruction. The idea of attempting to destroy or keep weeds under control seems to have occupied the mind of the average farmer to a very small extent.

After my return to Regina I received instructions to proceed to Swift Current. The Canada Land and Ranch Co. at this point was losing large numbers of sheep from an unknown cause, and poisonous plants were suspected. I was unable to find on their range any plants known to be of a seriously poisonous character, nor was I able to find anything in the stomachs of the carcasses that would support the theory of weed poisoning. However, the manager having placed some sheep at my disposal for the purpose, I experimented by offering them small quantities of various weeds which might be suspected of causing trouble, but only negative results followed. The trouble proved to be anthrax on further investigation by the veterinarian. When sufficient reliable information relative to the poisonous weeds shall have been collected, I would recommend that it be embodied in a special bulletin.

By request of the Agricultural Society of Regina, I attended their exhibition with the Government weed tent, showing both mounted and green specimens. The show extended over two days, 13th and 14th August, and a large number of persons visited the tent where many questions were asked and answered relative to the names and nature of the various weeds, and copies of the new Departmental bulletin on the destruction of them were given to those interested. I also showed mounted specimens of the troublesome weeds at the Olds Agricultural Society's exhibition, but the season was too far advanced for good samples of living plants to be found. A request was also made by the Yorkton Agricultural Society for the weed tent for their show, but as other engagements prevented my presence a collection of mounted specimens was sent for their use.

During the season I addressed fifteen meetings on the subject of weeds, most of these being included in the March series of institute meetings in North-Eastern Assiniboia.

In November and December I inspected over seventy elevators situated on the main line of railway, and on the Soo and Souris branches. On the whole, those in charge seemed to be careful in the matter of complying with regulations, so far as in their power, regarding the disposal of screenings, but no adequate accommodation has been arranged for these, nor have definite instructions been given relative to this matter by the companies, thus throwing on the buyer the responsibility of handling the very uncertain but always large quantity of screenings marketed. The weed crop harvested was comparatively small, but even with less than half the grain hauled many of the elevators, which were not run by steam, had more dirt than they knew what to do with. Some of the methods employed for the destruction of this accumulation were very questionable and subject to adverse criticism. While few of the elevators have now the opening of the dust spout high up and unprotected, many of them blow out seeds with the chaff if great care is not exercised by the person in charge. Objection has been made by some to making an enclosure about the vent in question, as they say the draft would be stopped, but as a number have been protected in this way and the draft was not stopped, this objection seems trivial; the truth of the matter is that the members of the elevator companies do not seem to thoroughly realise the importance of aiding and co-operating with the Department in its effort to prevent the further spread of weeds.

I looked over six elevators belonging to The Ogilvie Milling Co. and found that they were mostly shipping grain without cleaning.

Of fourteen owned by The Winnipeg Elevator Company only two required special attention. The one at Moose Jaw was blowing out seeds to a distance of twenty or thirty feet over the snow, and that at Weyburn had a quantity of screenings spread around it.

Thirteen of the Dominion Company's elevators were visited. The one at Gainsboro had a high dust spout, and farmers seemed to be allowed to help themselves to screenings; at Carievale screenings were placed outside.

The Northern Elevator Co had elevators at fifteen points visited by me. Of these I found only one about which I had to make serious complaint, and that was situated at Indian Head. The dust spout opened on to the track in this case and weed seeds were being blown out quite freely. At Balgonie the dust spout was high and unprotected but little could be seen beneath it but chaff.

The Western Elevator Company, with elevators at six points, could easily improve on their methods of dealing with screenings. At Glen Ewen a change of buyer had been recently made, and it was easily seen that great carelessness had previously existed, as a large quantity of screenings had been left outside and stray animals had fed upon it. At Caron no arrangements had been made for the proper disposal or storage of screenings. At Grand Coulee I found no one about the premises, but a door giving access to the screenings was standing wide open and a sled with some loose chaff, etc., on it was there.

The Lake of the Woods Elevator Co. have six elevators which I visited and found that they were shipping grain without cleaning it.

At Moose Jaw the elevator in connection with D. McLean's flour mill was blowing out a large quantity of screenings, which I found it necessary to call attention to. The Antler flour mill at Carnduff grinds screenings and the same may be said of the mill at Qu'Appelle. I examined some of the results of their grinding and failed to detect any whole seeds. Mr. Sharpe has an elevator at Moosomin and Mr. Hastings has one at Indian Head about which no complaint could be made. The Brassey Farm has an elevator at Indian Head but it was not receiving grain when I was there. There are Farmers' elevators at Indian Head and Sinaluta, which were apparently complying with the law. At Wapella Mr. Nixon's elevator was blowing more seeds from the dust spout than could be overlooked. The proprietor stated that he would make such change as was necessary to remedy this. The Grenfell Milling Co. has an elevator at Summerberry and one in connection with their mill at Grenfell. The latter blows out chaff and other light screenings over the railway track. Mr. Sanders has flour mills and elevator at Wapella and Whitewood, where the screenings seemed to be cared for in a proper manner. This was also the case with Messrs. Wilson & Wilson's mill at Indian Head. Along the Arcola branch railway six elevators have been erected this season; Western Elevator Company at Antler, at Manor and at Arcola; one at Carlyle and one at Arcola owned by the Northern Elevator Co., and another belonging to Mr. Kellett.

As I have already remarked, the quantity of weed seeds marketed last fall was less per bushel than usual. This, however, is not due to any very considerable improvement in the methods of our farmers, but rather to fortuitous circumstances. In the early part of the past summer many, I should probably say most, of the crops which had been sown on stubble were overgrown with weeds and the grain was very backward. So much

was this the case that a number of farmers were about to plough down such crops, but a spell of wet weather came and the wheat in turn overtopped the weeds and made a rank growth. Many weeds which thus had an early start ripened and dropped their seeds before the wheat was harvested, or were perhaps passed over by the binder and left in the long stubble. The exceptionally heavy crop of grain grown this year will probably have the effect of largely increasing the area of badly prepared land sown next season. Notwithstanding the general excellence of the crops, good work showed its advantages plainly in the heavier yields resulting from it. There is a wide difference in the profit derived from 15 and 50 bushels per acre, and yet these yields have been taken from adjoining fields.

Assiniboia has this year had twenty-three inspectors and has not by any means been thoroughly inspected, although most of those officials worked well and drove far in the discharge of their duties. In some cases complaints were received in which the actions of certain inspectors were called in question, but investigation showed no evidence of injustice or partiality. It was, however, found that a good many places had been overlooked owing to the limited time during which the funds available permitted of inspection being made. The feeling amongst the people seems to be favourable to this work but they think there is not enough of it. The educational work which has been done along this line in the past is bearing fruit, as shown by earlier and better working of fallows and by the greater anxiety displayed about "that other person's" dirty field. However, it would be another step in advance if the people would take an active interest in the destruction of weeds on the roads and on abandoned lands, and support their Local Improvement Overseers in this matter, not expecting that all such work should be done in spite of their refusal even to be hired to help. A number of cases of this kind occurred and weeds were left to ripen and blow about because teams could not be hired for the cutting of them. Still it cannot be denied that some of the overseers do not seem to realise the importance of this work.

The past has been a season in which biennials or winter annuals have been the prevalent weeds, and it was a surprise to many to find that hare's ear mustard withstood the frost and lived through the winter. Several persons called my attention to a native perennial weed with running roots, which choked down anything it might be growing amongst and was extremely difficult to eradicate: it was *Iva axillaris*, known as poverty weed, or smother weed. Shepherd's purse is rapidly spreading into the grain fields, and one inspector at least thinks that it chokes down the wheat more than stink weed does. The blue bur is making wonderful progress and the disagreeable smell of it could easily be noticed in many places.

It is to be expected that numerous other eastern weeds may be found after the large importations of dirty seed and feed grain, which occurred during the past season. Carloads of oats, ostensibly for feeding purposes, containing a large percentage of wild oats, etc., were sold at various points and no doubt much of this dirt has been sown. Much worse, however, has been the dissemination for seed of as foul a sample of oats as ever went under that name, and this is not the first time in the history of this country that such a thing has occurred. No matter where or from whom seed is procured it should never be sown without the most thorough cleaning, but in the past, and even now in the outlying dis-

tricts especially, many farmers had no fanning mills, and consequently, weed seeds were sown with the grain. Noxious weeds were also introduced in feed oats at the time of the rebellion in 1885, as shown by the Canada thistle in Saskatchewan. Feed grain at railway camps during construction of the various lines has been largely responsible for the spread of stink weed, and I have no hesitation in saying that until restrictions are placed on the importation and sale of feed stuff containing seeds of noxious weeds they will continue to spread. In view of the fact that new lines are being built, and others projected, which will open up large areas of fertile, but as yet uncultivated, land this matter should have attention. At a schoolhouse, where I held a meeting, stink weed and hare's ear mustard could be seen at the fence posts where the children had tied and fed their ponies.

Settlers from Dakota have been coming into Southern Assiniboia and going largely into flax growing, but, unfortunately, they have been bringing seed with them which has been anything but clean. Several inspectors have called attention to this and there is no doubt that special supervision should be exercised over these crops. Considerable flax was sown near Fort Saskatchewan, Alberta, and the weed inspector was requested to look at the numerous weeds which were found amongst it.

Both in Saskatchewan and in Alberta the work of inspection was very difficult owing to the wet weather, but notwithstanding this very full reports of their districts were made by most of the inspectors. Weed destruction did not make the progress it would have done if the weather had been more suitable. Sweet grass is most difficult to subdue in such wet seasons. Some were fairly successful with a smothering crop. Interesting experiments are carried on in this direction at the Calgary Territorial Experimental Station, under the management of Mr. P. T. Bone. Some land in the northerly portion of the Territories has been too wet to work at all. In higher and drier locations weeders have been used with good effect. A considerable acreage of land has been sown to brome grass, timothy and rye grass. More inspectors for Alberta are urgently needed in some of the older settlements, and I think it would be good policy to follow colonisation right up with this work. The sooner new settlers are made familiar with our weed laws the better for themselves and the country, and in case of foreigners unable to read bulletins, and who are not reached by lectures, the quickest way to instruct them is to show them the weeds in their fields and direct that these be destroyed.

While reviewing the season's work reference should be made to the unfortunate effect of the C.P.R. strike on the weed work. The absence of the section hands interfered with weeds along the right of way being destroyed in time to prevent their seeding. At some points arrangements were made through our inspectors to have this work attended to but this could not be done to any extent, and, consequently, there has been a great deal of dissatisfaction expressed by the farmers over the matter. Again I find it necessary to report that adequate steps are not being taken by civic authorities to have the weeds destroyed about streets and vacant lots. Calgary and Regina are very bad in this respect.

PROTECTION OF USEFUL BIRDS.

This subject is one which has been dealt with by legislation in nearly all the Provinces of Canada and it would appear that similar action could advantageously be taken in the Territories. Steps should certainly be taken at once to prevent the extermination of animals whose main diet is composed of vermin detrimental to agriculture.

Insectivorous Birds.

It would be well here to outline briefly the benefits conferred upon farmers by the insectivorous birds and even by some which are supposed to be entirely injurious because of their grain eating propensities. Inestimable good is done by the small birds in the consumption of insects of a noxious character. The food of the cow bird is said to consist of 20 per cent. noxious insects; 16 per cent. grain, about half of which is waste; and more than 50 per cent. consists of weed seeds. In an article in the New York Tribune some years ago an estimate was made of the quantity of weed seeds annually destroyed in the whole State of Iowa by tree sparrows and snow birds, and it was found that one of these birds consumed about $\frac{1}{4}$ oz. per day, and as they averaged ten per square mile and always remain in winter quarters about 200 days, it was estimated that they consumed 1,750,000 lbs. of injurious seeds. Noxious insects comprise one third of the robin's food. The meadow lark, which is often shot for the table, subsists on harmful insects to the extent of 50 per cent. of its food. Even the crow, in this country where little corn is grown, is to be considered beneficial to agriculture. The figures quoted are derived from the reports of the examination of thousands of stomachs of the various birds, and have appeared in bulletins issued by United States' scientific institutions.

Birds of Prey.

Season after season, from one district or another, a cry for help is heard against that perennial pest and tax gatherer, the gopher. A proper appreciation of the amount of destruction caused by the gopher and the importance of protecting his natural enemies may be formed by studying the nature of attempts made elsewhere to effect his extermination, involving the expenditure of vast sums of money in payment of bounties for tails or scalps, particularly in the States of Iowa, North Dakota, South Dakota and Minnesota. Ground squirrels, spermophile, and the pocket gophers, geomys and thomomys, are all included under the term "gopher."

Iowa paid bounties which varied from $4\frac{1}{2}$ cents to 20 cents per head, amounting to over \$50,000, but the expenditure had to be stopped before the desired end was anywhere near accomplished. This, however, has been the uniform fate of the bounty system. In Montana payments had to be stopped before the Act had been in operation six months. One county in North Dakota spent \$4,363 on bounties between April and July of one year and the result was a dismal failure, as it was found impossible to follow the matter up without bankrupting the county. In Meeker county, Minnesota, over \$14,000 was paid between May and October and gophers seemed as plentiful as ever.

Poisoning by means of strychnine has proved one of the most successful ways of killing gophers, but concerted action throughout the various districts affected is essential to have any lasting effect. Encouragement along this line was given to the farmers in the North-West Territories several years ago, by a free distribution of strychnine, but advantage was not taken of this to any great extent and the policy was discontinued. Nevertheless, the loss here from the ravages of gophers is very great indeed, both in grain fields and gardens, and also on the ranges, where they destroy vast quantities of grass, and where their burrows are a continual source of danger to stock riders. Fumigation with bisulphide of carbon has been successful as a mode of killing in many places where it has been tried, but it is necessary that the best quality of this chemical should be used for good results. The spread of disease amongst gophers by infecting them with cultures of various germs has been experimented with in Europe with some degree of success. Wheat was infected with the pathogenic germ by soaking in vessels containing the cultures, and a small quantity was deposited in the burrows. Experiments in the field proved that the bacilli of chicken cholera or mouse typhus might be relied on to kill all the gophers in a burrow, but the infection did not spread rapidly from one burrow to another, and a condition for successful work was the absence of green herbage.

In the face of all the difficulties in the way of destroying these pests, the average farmer will without the slightest hesitation, and with apparent satisfaction, kill his much abused and hard working friends, the hawk and the owl, that live principally on gophers and mice, of which they consume enormous numbers. Mr. G. E. Atkinson, an authority on the subject, says in his essay on the Manitoba Birds of Prey :

A Swainson hawk would catch and eat at least five gophers a day and, where one pair are at work they would destroy ten gophers a day for their own food, and at least as many more while feeding the young for about three weeks. At this rate they would feed the young 210 gophers in three weeks, and during the six months these birds are with us would destroy a great number of these pests.

Other species of hawks are equally diligent in the interest of the farmer and should be protected, with the exception of probably three or four species, even at the risk of an occasional chicken being taken. The owls are especially useful in the grain fields about the stacks and stacks, and are of considerable service, particularly in those districts where pocket gophers are abundant, as these animals, like the mice, are seldom seen abroad, being nocturnal in their habits, and consequently fall a prey to the vigilant owl.

The eagles, goshawk, pigeon hawk, Cooper's hawk, hawk owl, black-birds, English sparrow, loon, cormorant, pelican, and merganser should not be protected because of their depredations on poultry, game birds, grain fields, fish, etc.

II.—LIVE STOCK.

HORSES.

This subject is very fully dealt with by the Secretary of the Territorial Horse Breeders' Association, whose report is reproduced in the appendix.

The Horse Breeders' Lien Ordinance.—I can only reiterate the remarks made under this subject in last year's report. Either stallion owners do not desire the protection afforded by this Ordinance or the fee charged is too high, as very few registrations are now being made in the Department.

CATTLE.

The most prominent feature of the cattle situation during the past year was the unfortunate delay which occurred in the shipment of export stock owing to the cold, wet summer retarding the finishing process considerably. It is no exaggeration to state that export shipments last year were at least three weeks later than the average of preceding years. The stock inspection statement for the past year discloses the fact that the total export shipments for the Territories amounted to 31,573 head as compared with 48,114 of the previous year. With the late live stock shipments and extraordinary wheat and oat crop all over the West, the railway company, as was expected, found it difficult to supply sufficient cars to accommodate the cattle after the movement of wheat had commenced.

Prices of beef all over the Territories appeared to be fairly satisfactory: they averaged somewhere about \$3.50 per hundred pounds, which is practically the same as in 1900. Very considerable dissatisfaction arose, however, owing to the fact that buyers were not able to purchase all classes of stock. It was a very difficult matter to sell dry cows and butcher's beef weighing less than 1,200 pounds, which in many cases remained on the ranchers' hands for another year. A number of complaints were made early in the season on account of a shortage of cars and the generally unsatisfactory state of a great number of shipping yards throughout the West. At an executive meeting of the Western Stock Growers' Association held in October, the following resolution was passed:

That this meeting desires to bring to the notice of the C.P.R.: (1) That it is quite usual for stock cars, when provided for shipping purposes, to arrive at the shipping point in a dirty condition, the floor covered with refuse from previous shipments. (2) It is also a matter of frequent occurrence that stock cars are in need of repairs when sent out to shipping points and as the majority of such points are small isolated settlements, it is difficult, sometimes impossible, to get such repairs attended to. (3) That the slow time which stock trains as a rule now make is greatly detrimental to the condition of stock in transit, much unnecessary delay occurring, especially at divisional points. (4) That there is urgent necessity to enlarge and improve existing shipping yards west of Winnipeg, particularly those at Moose Jaw, they being quite inadequate, being badly laid out and having a supply of practically stagnant water, which is little better than a dangerous mud hole. It is also our opinion that some additional yards (capable of handling at least one train load) should be provided at some divisional point between Medicine Hat and Winnipeg where cattle could be fed and watered when necessary, and we suggest that Swift Current would be a suitable point.

To these several points we desire to respectfully direct your attention with the hope that the causes of these complaints will be remedied before the shipping season comes round again.

At an executive meeting of the Territorial Horse Breeders' Association the same matter was referred to. It is to be hoped that the railway company will see its way to meet the requests of shippers.

It is satisfactory to note that the Western Stock Growers' Association succeeded during the year in making definite arrangements with the

Canadian Pacific Railway Company respecting compensation for animals killed on their line. The following are the prices agreed upon:

PRESENT SCHEDULE.		OLD SCHEDULE.	
Calves.....	\$12.50		
Yearlings	} 17.50	Yearlings.....	\$10.00
Steers			
Heifers			
2-year-old heifers ..	25.00	2-year-old heifers.	13.00
2-year-old steers...	25.00	2-year-old steers.....	14.00
Cows.....	25.00	Cows.....	15.00
3-year-old steers ...	32.50	3-year-old steers.....	20.00
4-year-old steers ...	40.00	4-year-old steers.....	22.50
Bulls.....	40.00		

This arrangement, it should be remembered, applies to all portions of the range country and presumably to all stockmen, irrespective of whether they are members of the association or not.

It seems a pity that the Western Stock Growers' Association is not supported more generously by the smaller stockmen. This association is doing a most important work in the interests of ranchers all through the range country and is worthy of the assistance and co-operation of every stock owner residing within the limits of its field of operations.

I took occasion in last year's report to comment on the increased movement of stockers into the Territories from the Provinces of Ontario and Manitoba. The shipments for the present year numbered 30,000 from Manitoba and 15,855 from Ontario, a total of 45,855 as compared to 24,896 and 11,434 respectively, in all 36,330 during the year 1900. It is satisfactory to note that the production of stocker cattle for the ranges is receiving more attention in the mixed farming districts of the Territories, namely, Northern Alberta, Saskatchewan and Eastern Assiniboia. The shipment of stockers from point to point in the Territories during the past year numbered 14,218 as compared to 5,956 in 1900. A considerable proportion of the former, however, were stocker cattle brought in from the East to points in Western Assiniboia and reshipped from there. The farmers of Eastern Assiniboia, Saskatchewan and Northern Alberta could doubtless advantageously turn their attention to the production of stocker cattle of high quality. It is a regrettable fact that a large number of the young cattle coming in from Manitoba and Ontario are dairy bred or sired by dairy bulls and can never, with any system of feeding or management, attain the high quality which is essential to make the business of maturing cattle a success. It might be mentioned that 729 head of stockers were exported from Eastern Assiniboia to the United States during the past year. In districts where stabling and winter feeding is required and where, consequently, the number of cattle that can be kept is limited by the feed and accommodation available, very much larger profits can be made by increasing the number of breeding stock and turning all young cattle off as yearlings, instead of maturing them on the farm, which can be done much more economically and satisfactorily on the range. A practice which is gaining more and more in popularity in some of the ranching districts where the range is becoming overcrowded, such as the Pincher Creek district, is to ship the yearlings to other portions of the Territories where an abundance of free range is still available. This accounted for the shipping of over 3,000 out of the 14,218 head of stockers.

From time to time Canadian strays cross the International boundary line and find their way into the State of Montana and are duly rounded up and forwarded with "stray" shipments to the various United States cattle centres, disposed of and the proceeds remitted to the proper owners, through the Montana Stock Growers' Association. In some instances very satisfactory prices have thus been obtained, to which considerable prominence and publicity has naturally been given, with the result that the matter was widely discussed and commented on in the public press, and the contention gained ground all through the West that cattle were disposed of on this side of the line at a very considerable discount compared to United States prices. Under the circumstances the Department felt it its duty to look carefully into the question. In June last a letter was, therefore, addressed to Mr. W. J. Preuitt, Secretary of the Montana Stock Growers' Association, pointing out that complications had in the past frequently arisen through the drifting across the International boundary line of Canadian cattle which had been marketed by his association, and that it was alleged that the prices realised were considerably higher than the prices paid by Canadian dealers during corresponding periods, which naturally had given rise to speculation as to the cause of this supposed marked difference in value. The following quotations per hundred for export cattle at Winnipeg and Chicago were submitted :

October, 1900, Winnipeg, \$3.00 to \$3.25 ; Chicago, \$5.40 to \$7.00

April, 1901, Winnipeg, \$3.75 to \$4.50 : Chicago, \$4.90 to \$6.15

Mr. Preuitt was asked whether he could throw any light on this matter. In his reply he stated that if higher prices for beef were realised in the United States it was undoubtedly due to the large home consumption and to the fact that all the various byproducts of the beef, from horns to hoofs, were utilised. It was also pointed out that the top prices quoted at Chicago were for finished grain fed beef, which commanded a premium of at least one dollar per hundred over range beef. Mr. Preuitt furthermore made the statement that there were very few range beeves that sold above five cents per pound in Chicago at any time of the year.

After having obtained this explanation the Department set to work to gather some facts as to the actual prices that had been received for such stock on the American side. A detailed statement of 55 stray cattle sold in Chicago, by the Montana Stock Growers' Association, for account of one of the largest cattle concerns in the Territories, is herewith appended. It should, of course, be noted that $27\frac{1}{2}$ per cent. of the proceeds of the total was afterwards deducted by the United States Customs, which brought the price of the cattle considerably below current prices.

Date		Comm.	Shipping charges	Feed	Revenue	Yardage	Freight	Weight	Price	Amount
1900		\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	\$ c.	lbs.	\$ c.	\$ c.
Aug. 22	2 Cows							2,590	4 00	103 60
"	1 "							1,170	3 75	43 87
"	2 "							2,720	3 75	102 00
"	1 Steer							1,370	4 35	59 60
"	3 "	4 50	90	54	05	2 25	71 41	3,780	4 35	164 43
Aug. 27	2 "	1 00	12	34	02	50	17 30	2,800	4 20	117 60
Sept. 10	6 "	60	04	48		1 50	49 06	8,400	4 50	378 00
"	1 "	50	10	08		25	8 18	1,400	4 50	63 00
"	1 "							980	4 00	39 20
"	1 "	1 00	20	16		50	12 73	1,200	4 50	54 00
"	3 "	1 50	30	24	02	75	24 53	4,200	4 50	189 00
"	3 "	1 50	30	24	02	75	24 18	4,140	3 90	161 46
Sept. 18	1 "	50		10		25	8 30	1,380	4 90	67 62
"	1 "	50	10	05		25	7 65	1,300	4 80	62 40
Sept. 26	1 "	1 50		30		75	26 22	1,590	4 50	71 55
"	1 "							1,440	3 90	56 16
"	1 "							1,430	4 50	64 35
Oct. 3	2 "	1 00	20	18	02	50	16 29	2,760	4 50	124 20
"	1 "	50	10	09		25	8 15	1,380	4 50	62 10
"	1 Cow							1,110	3 55	39 41
"	1 Steer							1,230	4 25	52 28
"	1 "	1 50	30	30		75	21 34	1,230	4 25	52 28
"	1 Heifer							1,120	4 10	45 92
"	1 Steer							1,380	3 90	53 82
"	1 "	1 50	30	24	02	75	22 78	1,400	4 50	63 00
"	1 "	50	10	10		25	7 14	1,190	4 35	51 76
"	1 "							1,320	3 80	50 16
"	2 "							2,650	3 80	100 70
"	1 "							1,440	4 50	61 20
"	4 "	4 00	80	80	05	2 00	66 80	5,760	4 50	244 80
Oct. 8	1 "	50	07	07		25	9 25	1,480	4 70	69 56
Oct. 31	1 "							1,370	3 65	50 00
"	1 "	1 00		15		50	15 75	1,340	4 60	61 64
"	2 "	1 00	20	14	02	50	17 90	3,020	4 75	143 45
"	1 "	50	10	07		25	7 64	1,290	4 75	61 27
		25 10	4 23	4 67	22	13 75	442 60			
LESS										3,185 39
Freight									442 60	
Yardage									13 75	
Revenue									22	
Feed									4 67	
Shipping charges									4 23	
Commission									25 10	490 57
Net										2,694 82

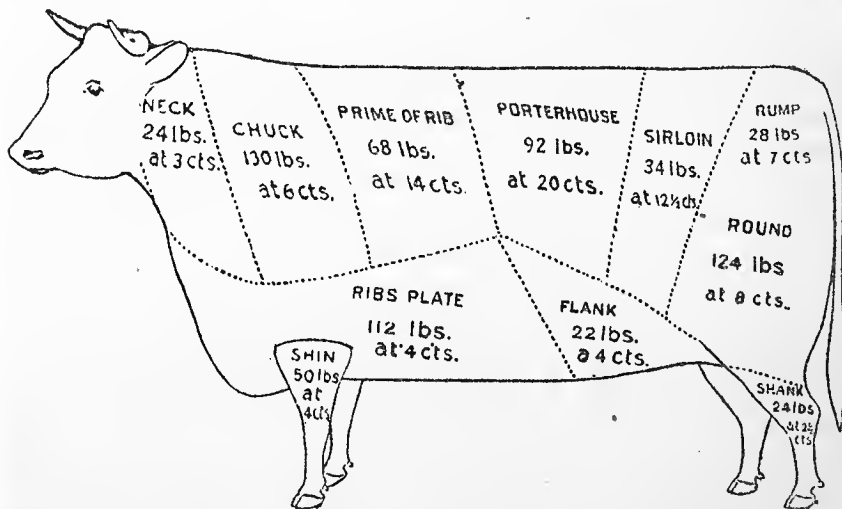
Although prices apparently ranged from \$3.55 to \$4.99, sight should not be lost of the fact that from these prices must be deducted the cost of freight from Montana to Chicago. The practice in the Territories is to sell at point of shipment, purchaser assuming freight. A study of these figures is of great interest; the average price per head realised was \$48.99½. This is probably a shade higher than the same cattle would have sold for on the Canadian side, but any difference that may exist is certainly not sufficient justification for the extravagant statements that

have been made about the advantages of free entry to United States markets and may be amply accounted for by the suggestions made in Mr. Preuitt's letter. Another prominent rancher states as follows:

We had had no stray cattle accidentally shipped with Montana cattle, that we know of: what have been shipped have sent to market and sold for us by the Montana Stock Growers' Association. I think I may safely say that more American cattle drift on to our range, and more of our cattle on to theirs, than any other company in the Territories. They sold for us last year 8 cows and 18 steers. The cows netted us \$30, the steers \$43.15; besides freight and expenses we had to pay \$10 per head duty. The price we got per 100 pound in Chicago for steers averaged \$4.60, for cows \$3.60; in Winnipeg they would have brought \$3.89 and \$3.05. The expenses for freight, etc., Montana to Chicago, were \$8.27 and \$0.50 each commission for selling, from Rush Lake to Winnipeg \$4.50. The reason they get a better price in Chicago is from the fact that there is fifty times the competition, there is at once a market for everything that goes in and cattle are shipped better and handled better in every way in transit.

Certainly the weight of evidence would seem to be very much against the contention that much higher prices are generally received in the Western States than on this side of the line; at the same time, it cannot be denied that there is at eastern points a tendency to pay more in the United States than in Canada. The best offer that could be obtained for the Territorial exhibit of range cattle at the Pan American Exhibition was 5 cents at Toronto and Montreal, while the dealers at Buffalo were offering 5½ cents for export. This difference, however, is due to lower railway transportation charges on the eastern section and possibly, also, to the smaller cost of ocean space at United States ports.

The Beef Carcase from the American Retailer's Standpoint.—In view of the agitation for free entry of our cattle to United States markets it is of interest to form an idea of the basis upon which the beef carcass is valued by the Chicago butcher. Indeed, this standard of valuation may be considered as of fairly general application. The cut below represents a steer, the dotted lines indicating the manner in which the carcass is cut up and each cut has the value marked on it and also the weight it ought to attain in a well proportioned beast weighing 1,200 pounds live.



It will be noticed that this steer dresses 800 pounds with 708 pounds of marketable meat. The best cuts off the ribs, loin and hind quarters weigh 346 pounds and are worth \$14.55. The inferior cuts from the belly, fore-quarters and flank weigh 362 pounds and are valued at \$16.48. These, of course, are retail prices. A study of this illustration will indicate where the expert buyer looks when valuing beef animals on the hoof and where, consequently, it behooves our stockmen to aim at the highest possible development.

The diagram here utilised appeared in the last quarterly report of the Kansas Board of Agriculture and is reproduced in this report through the courtesy of "The Farning World," of Toronto.

Admission of Canadian Stores to Great Britain.—During the year an attempt was made by the Dominion Department of Agriculture to re-open the question of the admission of Canadian store cattle into Great Britain. The Minister of Agriculture, Hon. Sidney Fisher, visited Great Britain and interviewed the President of the British Board of Agriculture, the Right Hon. Mr. Hanbury who, however, emphatically declined to reconsider the matter. Mr. Hanbury pointed out that the question was not one of departmental regulation but had to be dealt with by the Imperial Parliament, which had enacted prohibitory legislation applying to live animals from all over the world, so that Canada in this respect occupied exactly the same position as other countries.

This is a subject in which the Territories are specially interested. Our exports of cattle for the year 1900 constituted somewhat over 48,000 head out of the total 115,000 head exported to Great Britain from the whole of Canada. This implies that nearly 42 per cent of the total Canadian cattle export emanates from the Territories. Another reason why the West is particularly interested in the matter is that the bulk of western export cattle are unfinished stock and we are, therefore, the heaviest losers by the present restrictions, and vastly more interested than any other portion of Canada in having the Canadian cattle trade with Great Britain placed on the footing it occupied before the scheduling of our stock.

It will be of interest to trace briefly the history of the exclusion of Canadian live cattle. In 1892 British veterinarians announced that pleuro pneumonia had broken out in a shipment of cattle from Canada. The machinery of the British Board of Agriculture was at once set in motion and provision made for the immediate slaughter on landing of all Canadian cattle, until further notice. The fact that the Canadian authorities had at the time no official knowledge of the existence of this disease in Canada would appear to be presumptive evidence of erroneous diagnosis, which was immediately pleaded by Canada. Repeated attempts were made during succeeding years to have the restriction removed, but the British breeder, having once tasted of the fruit of protection, was not at all disposed to revert to the old order of things without a determined struggle and it evidently became a political impossibility to open the doors to Canada again. In 1895 an Act of Parliament prohibited the importation of live cattle from all countries. That the question of the health of Canadian cattle—good, bad or indifferent—no longer "cuts any figure" in the controversy is apparent from the fact that the British Board of Agriculture still clings to its diagnosis, in spite of the record of some 800,000 head of Canadian cattle having been landed at British ports since 1892, and that there has not been a single case of real or suspected pleuro pneumonia brought to light amongst them,

It has been argued with considerable force that, quite apart from sentimental considerations, the rigid exclusion of healthy store cattle is not in the interest of the British farmer. The statement is authoritatively made from time to time that there is a scarcity of store cattle in Great Britain; certainly, it cannot be denied that a scarcity annually exists during the early summer months which could be met from Canadian sources. It would appear, to those not possessing an intimate knowledge of British agricultural conditions, as if the most remunerative line of stock farming in Great Britain would necessarily be confined to the rearing of pure bred stock to fill the rapidly increasing demands of the colonies, the Argentine and other foreign countries, and the finishing of store cattle. On the other hand, it is claimed that free admission of stores would operate adversely against the British dairy industry. As far as the graziers are concerned the desire is unanimous that healthy store cattle should be freely admitted. At the time of the exclusion of Canadian cattle, those who had the cause of the British farmer at heart pinned their faith to his ability to increase his cattle stocks. That this hope was not realised is evident from the fact that although there was an increase of cattle in Great Britain of considerably over one million head between the years 1875 and 1892, when the restriction was imposed, there has been a decrease since that time of nearly 200,000 head. Another stronghold of opposition is Ireland, where the Board of Agriculture is putting forth strenuous efforts in the way of improving the native breeds of cattle and fostering the production of stores for shipment to England and Scotland.

The main objection, from the standpoint of the producer, against the immediate killing of cattle after landing is the fact that this process involves a sinful waste of good material and is in principle directly opposed to all rules of economy and good management. Practically all the Canadian cattle that come from the North-West Territories and Manitoba are grass fed and unfinished and the shrinkage *en route* is naturally very considerable. The bulk of these cattle are merely veneered with flesh, and if, instead of being slaughtered upon arrival, when they are in the worst possible condition, they were shipped to British grazing farms and subjected to a six months' finishing process they would turn out excellent beef. Our cattle possess strong frames and vigorous constitution and may be said to be ideal store stock. At present we do not occupy even a fourth or fifth place as regards the quality and value of our cattle in the British market. It is clear that our remedy lies in better finished stock and the dead meat trade.

SUMMARY OF DISTRICT REPORTS.

North Eastern Assiniboia.—The losses in this district during the winter of 1900-01 were about 1 per cent., but, owing to the late spring, some additional losses occurred in the ranching sections where the calf crop was about 65 per cent., while 85 to 90 per cent. was secured where shedding or stabling the stock has been practised. There has been more than the usual quantity of hay made and sheaf oats saved for feeding to milch cows and fattening stock. Range cattle did not, however, go into

the winter in good shape owing to the rankness of the grass and worry from mosquitos up to late in the fall. Grass did not cure well, being green when frozen. Market conditions during the year were fair. Three year old steers brought $3\frac{1}{4}$ to $3\frac{1}{2}$ cents per lb. live weight, amounting to \$43 to \$44 per head and \$50 for four year olds. Cows brought $2\frac{1}{2}$ to 3 cents. No serious losses occurred during the summer; some cattle suffered from sore feet in wet places. A few cattle suffering from lump jaw were destroyed. A large number of pure bred bulls of the beef breeds were brought into the district and the quality of the cattle is improving each year, but more competition amongst buyers is needed. There is a feeling of insecurity on the part of the ranchers, because of the crowding in of new settlers.

Dundurn.—Cattle in this district are fed when the snow gets deep and the losses during the winter only amount to 1 to 2 per cent. The natural increase has been about 50 per cent. of full grown breeding stock. The quantity of hay put up was quite as good as usual, but for the last three years there was too much rain for the best results. The cattle ranged out well into the present winter and at the present time appear to be in good condition. Three year old steers brought \$40.00 per head and females \$32.00. The only losses suffered were through cattle getting mired in alkali holes in the spring. No outbreaks of disease occurred, but perhaps 1 per cent. had to be shot because affected with actinomycosis. Calves were weaned about the beginning of December and are now being yard fed and doing well.

Wood Mountain.—The average of winter losses on this range did not exceed 2 per cent., which is a slightly better showing than that of the previous year. A few fatal cases of symptomatic anthrax occurred amongst stockers, and coyotes destroyed some of the calves. The natural increase has been about 65 or 70 per cent., and an adequate supply of good hay was put up. The cattle went into the winter in excellent condition. The cattle industry is on the increase in this district, but some system of inspection is needed on account of proximity to the boundary line. The prices realised for three year old steers ranged from \$35 to \$40, and \$45 for fours, while cows brought \$28.

Maple Creek.—About the usual winter losses were sustained in this district and would probably be below 5 per cent. The natural increase was estimated to be 55 per cent. of the mature females, but of course, in small and closely herded bunches, the rate would be much higher. There was more than the usual quantity of hay put up and the quality was very good, much better than usual. Cattle went into the winter in good condition and, as the grass cured well on most of the range, they may be expected, with the favourable weather now experienced, to go through in good shape for the early market. The prices ranged from \$40 to \$45 for three year olds and \$45 to \$50 for more mature steers, or about \$3.50 per cwt. Dry cows brought from \$30 to \$35. Beef did not go out as well as usual owing to the wet spring, soft grass and flies. The losses from wolves seem to have been somewhat heavier than usual. This may to some extent account for the small increase. Cattle are still found to be affected with mange on some portions of the range. Symptomatic anthrax has been prevalent in some districts and an occasional case of actinomycosis is observed. It is thought that bulls of more pronounced beef type is a prime necessity for the improvement of the cattle on this range.

Medicine Hat.—The winter losses on this range have been nominal although the late spring and cold rains were an unfavourable feature of the season. The natural increase was reported to be about 70 per cent. of the females. Considerably more hay than last year has been secured owing to fine weather, and the quality was good. Cattle went into the winter in good condition; some say they never looked better than last fall. A good deal of prairie was burned over in the fall, but the grass cured well on the greater part of the range. The consensus of opinion here is that the state of the market for beef was most unsatisfactory. A great many steers had to be carried over. Prices varied from \$37.00 to \$48.00, a few choice ones went at the top figures. Cows brought from \$30.00 to \$35.00. In the hills to the south wolves have done considerable damage during the summer and fall. One rancher reports having lost 20 out of 150 calves, and also some older stock from the depredations of these pests. Towards Coutts, however, the losses from wolves were somewhat lighter than usual owing to the bounty provisions. Some 75 wolf pups were killed during the summer. Mange seems to be disappearing from this range, but there has been a considerable loss from symptomatic anthrax amongst young stock. The general health of cattle was excellent.

Nucleod and Lethbridge.—Although the winter was favourable, the early spring losses were somewhat heavier than usual owing to unfavourable weather. The calf crop was much lighter than that of the previous year, being as low as 60 per cent. in many cases. More hay than usual, and of an excellent quality, was put up, as the hay season was an exceptionally good one. Cattle were in prime condition for wintering, which has been well sustained, owing to the grass having cured well on this range, and weather conditions having been very favourable. Weaners were worth \$17.50 in the fall, and yearlings \$22.00 per head. Cows sold for \$35.00, while beef steers brought \$40.00 to \$45.00, or \$3.50 per cwt. The coyotes as usual killed a number of calves, but few losses were suffered from wolves. Some cases of symptomatic anthrax occurred amongst dogie cattle, and some scab was reported; but the general health has been excellent.

Pincher Creek.—The grass not having cured well on this range in 1900, cattle wintered badly and many of the smaller ranchers lost heavily in the spring, as they did not feed out their hay early enough, and consequently could not use it after the green grass appeared when cattle refused it. The loss has been fully double that of the previous year. As high an increase as 80 calves per hundred cows was obtained where cattle were carefully handled, but probably 50 per cent. would be about an average for the range. The late spring storms were responsible for the loss of a great many calves. The hay season was one of the best in the history of the district and more than the usual quantity of hay of good quality was secured. A considerable percentage of this was shipped to British Columbia in baled form. Stock were in good condition at the beginning of the present winter. The grass was well cured on the greater part of the range. A good many young cattle were shipped away to be matured on more favourable ranges, as the country here is being fenced to such an extent that cattle do not fatten readily. Mixed bunches sold for \$30.00 per head, spayed heifers \$40.00, steers \$40 to \$48. Beef sales were very slow early in the season, but improved later and the general impression here seems to be that beef sold off very clean.

Wolves did little damage and, with the exception of some isolated cases of symptomatic anthrax in calves and yearlings, no diseases were prevalent. Cattle never held their condition better than during the present winter, and very little hay has been fed up to the end of the year.

Porcupine Hills.—The winter losses last year were not very heavy, but were severe during the bad weather in the spring of 1901, amounting to nearly 10 per cent. or double that of the previous year. The increase of calves is thought by some of the large ranchers to have been little over 40 per cent. of the breeding stock, but in some of the smaller bands 75 and 85 per cent. have been reported. More hay than usual was made and the quality was good. Stock were in good condition at the beginning of the present winter, and the grass seems to have cured fairly well. Wolves were not very destructive but the damage done by coyotes is becoming serious. A few scattered cases of mange and actinomycosis were reported, and there was a loss of 5 per cent. from symptomatic anthrax amongst the calves in some bunches. The want of a reliable vaccine at a low figure is reported to be felt. Three and a half cents at the shipping point, meaning well over \$45 00 for good steers, was paid.

High and Sheep Rivers.—More than the usual losses occurred during the late winter and spring of 1901, caused by unfavourable weather. A snow storm, which occurred in June, was hard on stock, many calves and colts succumbing. The increase was, therefore, low and would be little over 50 per cent. of breeding stock, or 15 per cent. less than that of the previous year. More hay than usual was put up and the quality was splendid. The range cured well and cattle were in good condition at the beginning of the present winter. \$30 to \$32 per head was asked for mixed range bunches. Beef sold at \$37.50 to \$50.00, or 3½ cents per lb. on foot. There were some losses from coyotes and wolves here and there on the range. A little mange was noticed and there has been considerable loss from symptomatic anthrax amongst young stock.

Bow River East.—The losses of the winter and spring of 1901 on this range were fully 10 per cent. and much heavier than they have been at any time during the past eight or ten years. The increase was about 30 per cent. of the range stock. There was more hay and of a better quality than any year yet. The range cured well and cattle were very fat at the beginning of the present winter. A few deaths occurred from blackleg amongst the yearlings, but the general health of cattle was good. A dollar a head more was realised for beeves than during the year previous.

Calgary and Bow River West.—The actual winter losses for 1900-1901 were not heavy, but in the spring the weather was so bad that the percentage of deaths was very much higher than it has been for many years, being estimated at 10 to 15 per cent. Many cows lost their calves, and the increase, therefore, only averaged about 55 per cent. of the breeding stock. More than the usual amount of hay was put up of fair quality. Stock went into the present winter in good shape, and will probably hold their flesh as the grass cured well. Upon the western portion of the range about 10 per cent. of calves were killed by timber wolves, but there were no other summer losses except a few cows mired and some cases of symptomatic anthrax. The market prices were slightly better than in former years. Beef steers brought 4 cents per lb. in spring and 3 to 3½ cents in the fall, while cows sold for half a cent less. The western portion of this range is said to be as heavily stocked now as it can stand.

Northern Alberta.—Shortage of feed caused by the previous wet summer was responsible for some heavy losses, as the grass had not cured and the spring was so backward that the supply of hay proved insufficient. So many cattle being stabled in this district, which is largely devoted to dairying, would naturally result in a higher percentage of calves than in the purely ranching sections. The hay season of 1901 was better than it has been for several years and the quantity and quality secured was good. There has been no sickness or loss amongst cattle during the summer, but a great many horses died of malarial or swamp fever. Prices paid for beef cattle were 4c. per lb. in the spring and 2½ to 3c. at a later date. Cows were difficult to dispose of.

IMPROVEMENT OF CATTLE.

Importation of Purebred Bulls.—Satisfactory arrangements having been made with the Canadian Pacific Railway Company respecting the continuation for the past year of the privilege of free transportation of eight carloads of pure bred bulls from points in the Provinces of Ontario and Manitoba to the North-West Territories, the work initiated some years ago in connection with the importation of pure bred bulls from the said provinces at an uniform rate of \$5 per head, was continued on the usual basis.

Thirty-eight bulls were imported during the year under the auspices of the Department, 25 from Manitoba and 13 from the Province of Ontario. These animals were collected at 23 different points and consigned to 24 different destinations. The cost per head, including local freight charges, of the Ontario importation was \$11.12 and of the Manitoba importation \$3.45. These bulls were distributed as follows: 14 in Assiniboia, 19 in Alberta and 5 in Saskatchewan. The total cost of the shipment was \$229.77 and the revenue therefrom \$190, leaving only a balance of \$39.77 to be defrayed out of public funds.

BULLS Imported from Manitoba, 1901.

BREED	SHIPPING POINT	DESTINATION
One Hereford.....	Souris.....	Caron
One Ayrshire.....	Glenboro.....	Grenfell
Two Galloways.....	Carberry.....	Rush Lake
Two Hereford.....	Souris.....	Maple Creek
One Shorthorn.....	Griswold.....	Qu'Appelle
One Hereford.....	Souris.....	Pense
One Shorthorn.....	Carman.....	Prince Albert
One Shorthorn.....	Carberry.....	Saskatoon
One Shorthorn.....	Cypress River.....	Duck Lake
One Shorthorn.....	Carberry.....	Saskatoon
One Hereford.....	Cartwright.....	Edmonton
Two Shorthorns.....	Winnipeg.....	Wetaskiwin
One Shorthorn.....	Ninga.....	Innisfail
One Hereford.....	Deleau.....	Wetaskiwin
One Hereford.....	Souris.....	Edmonton
One Polled Angus.....	Carroll.....	Strathcona
One Shorthorn.....	Westbourne.....	Ponoka
Two Shorthorns.....	Methven.....	Wetaskiwin
One Shorthorn.....	Emerson.....	Cowley
Two Shorthorns.....	Ninga.....	Cowley

BULLS Imported from Ontario, 1901.

BREED	SHIPPING POINT	DESTINATION
One Shorthorn	Strathroy	Regina
One Shorthorn	St. Thomas	Walsh
One Shorthorn	Myrtle	Moose Jaw
Two Galloways	Guelph	Maple Creek
One Galloway	Guelph	Yorkton
One Galloway	Guelph	Prince Albert
One Shorthorn	Guelph	Lacombe
One Shorthorn	Elora	Lacombe
One Shorthorn	Strathroy	Strathcona
One Shorthorn	Hensall	Red Deer
One Shorthorn	Caledonia	Lacombe
One Shorthorn	Aurora	Wetaskiwin

LOCAL PRODUCTION OF PURE BRED CATTLE.

When the policy of affording assistance towards improvement in cattle was initiated it was considered advisable to confine the efforts of the Department strictly to aiding the importation of pure bred bulls. It was at that time felt that the development of the Territories had not reached the point where pure bred stock could be cared for, developed and fitted to compete on anything like fair ground with eastern bred stock, on account of our somewhat rigorous climate and generally crude stable accommodation incidental to settlement still of a pioneer character. Another objection to encouraging the breeding of pure bred stock was the supposed absence of a class of breeders in this western country possessing the requisite experience to render them likely to make a success of raising pure bred stock. Since then there has, however, been a very considerable immigration into the Territories and the unlimited demand, and generally excellent market conditions, for pure bred bulls in the ranching districts of the West have tempted a considerable number of our smaller farmers and stockmen to acquire the nucleus of pure bred herds, and has also been the means of attracting to this country a number of experienced pure bred stock breeders from Manitoba and Eastern Canada, who have at last come to the conclusion that there is greater profit in bringing "Mahoniet to the mountain" than attempting to reverse this proceeding.

The sale of pure bred cattle held at Calgary last year, which is reported upon elsewhere, disclosed unmistakably the very material change which has taken place in this respect during the last few years. It was clearly demonstrated there that not alone could pure bred cattle be successfully bred and reared in the Territories, but a large number of home-bred bulls were brought out in the very pink of condition, indicating skillful feeding and handling of no mean order. In view of these circumstances you came to the conclusion that the time had arrived when all the assistance possible should be extended to the breeders of pure bred cattle now in the Territories with a view to fostering an industry which promises great results in the west, and which has made the Province of Ontario what it is today.

It is a well known fact that thousands of dollars are annually sent out of the Territories for pure bred bulls for use on western ranches, and

that this demand could at least partly be supplied from local sources if a larger number of our skilled breeders and feeders would acquire pure bred herds. It cannot be successfully maintained that there is any difference topographically, climatically or otherwise between, for instance, Eastern Assiniboia and the wheat growing districts of Manitoba, such as the Portage Plains, Brandon and other portions of the province. Yet superior individuals of nearly all recognised breeds of cattle and other live stock are being produced in the Province of Manitoba in increasing numbers. It will be readily conceded that conditions here and there in no respect differ in favour of our neighbour to the East while, on the contrary, it has been amply demonstrated by actual experience that many portions of the Territories present a most favourable field, from every point of view, for the successful breeding and raising of pure bred stock. What we now lack in the Territories is simply more herds and more breeders. As regards the ranching country itself, as a field for pure bred cattle raising, it stands to reason that, other things being equal, pure bred bulls raised there must of necessity be more suitable to that portion of the country than those which are imported from any other part of Canada. It is to be hoped that the farmers in the mixed farming portions of the Territories will not be slow to recognise the opportunities they have of working up a paying business through the production of pure bred ranche bulls, and that a larger number of skilled breeders from the Eastern Provinces will speedily transfer their establishments to the Territories. A fairly complete list of breeders of pure bred cattle residing in the Territories has been compiled in the Department, which discloses the fact that we have now 206 breeders in active operation, of those 109 belong to Alberta, 81 to Assiniboia and 16 to Saskatchewan.

In order to afford valuable assistance to local breeders and to encourage the upbuilding of a new and remunerative industry in the Territories, negotiations were opened, under your directions, with the Canadian Pacific Railway authorities with a view to securing free transportation for a certain number of pure bred cows and heifers, or rather to have female stock included under the present arrangements respecting bulls. It was pointed out, as a strong argument in favour of the company granting the assistance asked, that thousands of dollars are annually lost by the diminished calf crop owing to the failure of bulls imported from Ontario to breed successfully during their first year in this country, and that, from a standpoint of increased freight traffic only it would be in the interest of the company to accede to the request of the Department. After the case had been submitted to the management it was decided that the company could not see its way clear to grant the request. Under the circumstances you came to the decision that the Department would undertake the importation of females upon the payment of \$7.50 per head, the Department assuming freight and the following circular was issued to all applicants for transportation of such stock :

I enclose herewith a printed memorandum setting forth the manner in which the Department encourages the importation of pure bred bulls, and also beg to inform you that it has been decided to extend the privilege, under the same restrictions, to cows and heifers upon payment of the sum of \$7.50 per head, in consideration of which the Department will undertake to carry female stock for *bona fide* residents of the Territories, from any convenient railway point in Manitoba or Ontario to any point on a railway operated by the Canadian Pacific Railway Company in the Territories. Not more than three head will be carried under this arrangement for each individual, but any additional number of cows and heifers may be sent with the Government shipment under the arrangement outlined in the fourth paragraph of the attached memorandum. Proper forms of application may be obtained upon application to the undersigned.

This subject of local production of pure bred cattle is further dealt with in the report of the Secretary of the Territorial Purebred Cattle Breeders' Association, which appears elsewhere.

DAIRY INDUSTRY.

Through the courtesy of Professor Robertson, Dominion Commissioner of Agriculture and Dairying, I attach a statement showing a summary of the business at the various dairy stations throughout the Territories, under the control of the Dominion Government for the seasons 1898 to 1901 inclusive:

SUMMARY of the Business for Season of 1901 at the Dominion Experimental Stations in the North-West Territories.

NAME OF STATION	No. of patrons	Inches of cream supplied	Pounds of milk supplied	Lbs of butter manufactured	Average price realised at creamery	Mfg charge per pound	No. of days in operation	Gross value of product
					Cts.	Cts.		
Calgary	1898 59	15,627	125,186	19,389	20.25	4	168	\$3,926 70
	1899 43	24,806.7	.....	24,677	21.56	4	174	5,319 47
	1900 65	31,624.2	.....	34,099	20.20	4	178	6,893 20
	1901 64	27,427.6	.....	28,178	19.28	4	163	5,435 20
Churchbridge	1898 70	21,429	.....	22,223	18.85	4	111	4,189 21
	1899 84	29,739.6	.....	31,674	20.19	4	167	6,396 77
	1900 127	61,909.7	.....	65,325	20.02	4	188	13,084 80
	1901 233	107,427.5	.....	121,419	19.14	4	202	23,239 68
Edmonton	1898 48	12,346	115,036	17,068	18.80	4	156	3,209 19
	1899 49	14,149.9	70,144	17,322	20.96	4	160	3,631 56
	1900 51	19,693.7	.....	17,089	20.60	4	168	3,520 61
	1901 59	17,210.9	.....	16,508	20.00	4	153	3,302 29
Grenfell	1898 77	35,179	.....	42,838	19.04	4	149	8,156 47
	1899 71	32,204.4	.....	39,154	20.28	4	152	7,943 02
	1900 83	42,031.9	.....	49,817	20.	4	173	9,963 78
	1901 89	43,907.1	.....	53,119	19.12	4	159	10,159 93
Innisfail	1898 105	39,003	437,405	57,717	20.40	4	184	11,775 55
	1899 156	68,924.8	349,682	86,040	20.69	4	184	17,805 53
	1900 130	84,429.2	.....	89,402	20.05	4	184	17,926 15
	1901 131	83,588.3	.....	90,484	19.16	4	184	17,338 49
Maple Creek	1898 15	11,621	.....	12,362	20.06	4	158	2,479 99
	1899 12	7,283.8	.....	7,921	21.41	4	128	1,696 56
	1900 15	8,265.8	.....	8,806	22.22	4	151	1,956 68
	1901 10	5,035.8	.....	5,792	20.83	4	111	1,206 98
Moose Jaw	1898 39	31,580	.....	37,999	20.00	4	179	7,603 53
	1899 34	27,974.7	.....	34,915	20.48	4	191	7,152 62
	1900 31	24,826.9	.....	32,285	21.50	4	195	6,943 86
	1901 24	15,542.1	.....	20,500	20.19	4	182	4,140 21
Moosomin	1898 47	14,567	.....	14,523	18.55	4	134	2,695 28
	1899 40	7,725.6	.....	8,461	20.67	4	118	1,748 34
	1900 67	22,836.5	.....	24,296	20.23	4	152	4,912 62
	1901 122	40,283.0	.....	42,831	19.15	4	156	8,205 04

SUMMARY of the Business for Season of 1901 at the Dominion Experimental Stations in the North-West Territories.—*Continued.*

NAME OF STATION	No. of patrons	Inches of cream supplied	Pounds of milk supplied	Lbs. of butter manufact'd	Average price realised at creamery	Mfg charge per pound	No. of days in operation	Gross value of product	
					Cts.	Cts.			
Olds.....	1898					4			
	1899					4			
	1900	31	11,597.6		11,007	20.00	4	93	2,201 70
	1901	30	22,195.5		22,166	19.11	4	169	4,236 98
Prince Albert	1898	31	10,717	7,237	12,644	18.51	4	143	2,340 64
	1899	22	10,366.5		13,758	20.44	4	136	2,812 54
	1900	38	14,146.9		18,792	20.26	4	139	3,808 90
	1901	40	11,763.0		16,223	19.50	4	118	3,164 09
Qu'Appelle .	1898	66	26,713		26,188	18.70	4	150	4,898 22
	1899	45	17,158.1		16,561	20.22	4	148	3,348 45
	1900	57	23,974.7		24,647	20.16	4	190	4,969 05
	1901	62	24,879.6		28,070	19.33	4	200	5,431 60
Red Deer	1898	76	28,253	217,572	42,878	19.84	4	184	8,507 54
	1899	110	46,676	157,306	62,142	20.87	4	184	12,968 23
	1900	92	49,475		63,887	20.24	4	182	12,933 18
	1901	111	47,665.2		60,450	19.16	4	188	11,583 12
Regina	1898	49	24,301		25,450	19.05	4	157	4,849 26
	1899	47	21,181.9		23,051	20.04	4	160	4,615 33
	1900	49	24,267.8		24,645	20.18	4	182	4,973 95
	1901	77	32,563.6		34,601	19.43	4	187	6,724 41
Saltcoats	1898	76	21,343		18,779	18.15	4	139	3,409 85
	1899	45	13,808.3		13,190	20.07	4	139	2,647 58
	1900	53	19,771.5		18,650	20.09	4	156	3,747 34
	1901	53	16,618.9		15,117	19.21	4	153	2,904 37
Saskatoon..	1898	18	8,631	16,581	10,202	18.92	4	153	1,930 49
	1899	13	7,929.1	14,406	9,197	20.49	4	146	1,884 46
	1900	10	9,411.5		10,398	20.14	4	161	2,094 97
	1901	8	4,437.1		4,372	19.35	4	137	846 18
Tindastoll. .	1898						4		
	1899	66	6,350.2	162,406	14,655	21.78	4	112	3,192 51
	1900	75	37,374.1	9,798	45,770	20.04	4	184	9,173 08
	1901	41	28,235.8		31,527	19.15	4	184	6,037 87
Wetaskiwin	1898	58	8,576	456,914	27,136	20.08	4	192	5,449 65
	1899	71	14,815.4	403,581	32,350	20.99	4	184	6,789 29
	1900	66	16,384.1	36,413	33,770	20.01	4	184	6,787 70
	1901	27	7,918.1	80,579	12,185	19.17	4	160	2,338 10
Whitewood .	1898	85	41,271		44,308	19.07	4	166	8,450 52
	1899	89	30,276.5		42,284	20.07	4	175	8,485 70
	1900	68	32,892.4		37,038	20.07	4	183	7,434 50
	1901	76	30,848.0		33,700	19.14	4	150	6,470 68
Yorkton....	1898	91	38,961		35,413	18.26	4	137	6,466 61
	1899	50	18,680		17,491	20.21	4	143	3,535 19
	1900	61	27,075.5		27,329	20.00	4	165	5,468 71
	1901	88	33,410.0		35,151	19.31	4	146	6,718 38
The Territories ..	1898	1051	396,606	1,657,542	484,948	19.22	4	2,934	93,740 67
	1899	1072	407,095.8	1,303,221	501,907	20.70	4	3,035	103,492 32
	1900	1169	560,989	46,211	637,052	20.32	4	3,208	128,794 78
	1901	1345	600,957.1	80,579	672,393	19.40	4	3,102	129,483 60

STOCK INSPECTION

Very few difficulties arose during the year in connection with the administration of The Stock Inspection Ordinance, which appears to work smoothly. There was a notable falling off in the inspection work, principally due to the marked decrease in eastern export shipments. The increase in horse inspections is chiefly owing to the shipments made by Colonel Dent, the Imperial Remount Officer, which were passed by the various stock inspectors free of charge, for which the Department is under obligation.

The following schedule show the details of the inspection of cattle and horse shipments for the year and a comparative statement showing the figures for previous years:

STOCK SHIPMENTS.—Comparative Statement.

DISTRICTS.	EXPORTS.				LOCAL SHIPMENTS.			Total	
	East		West		Cattle			Cattle	Horses
	Cattle	Horses	Cattle	Horses	Stockers to Ranges	Others	Horses		
East Assiniboia .	1899	7,973	26	10	1	.....	.....	9,142	27
	1900	13,871	10	47	.....	4,080	178	433	18,176
	1901	* 6,611	73	82	.....	4,378	262	18	11,333
West Assiniboia {	1899	10,929	453	170	10	.....	.....	13,677	636
	1900	10,942	127	172	6	916	6,196	241	18,226
	1901	† 9,322	527	227	8	4,148	1,292	900	14,989
North Alberta ..	1899	568	.....	55	.....	.....	.....	1,239	.....
	1900	492	8	921	.....	222	3,221	.....	4,856
	1901	36	21	1,254	8	1,129	1,083	8	3,502
South Alberta ..	1899	13,095	1,251	5,906	202	.....	.....	21,748	2,608
	1900	18,549	1,865	5,875	131	.....	.....	27,548	3,158
	1901	13,631	3,518	6,627	297	3,046	844	1,655	24,148
Saskatchewan ..	1899	2,765	.....	.....	.....	.....	.....	2,881	.....
	1900	4,260	.....	.....	.....	738	304	.....	5,302
	1901	1,973	.....	.....	.....	1,517	.....	.....	3,490
The Territories	1899	35,330	1,730	6,141	213	.....	.....	48,687	3,271
	1900	48,114	2,010	7,015	137	5,956	13,023	1,836	74,108
	1901	31,573	4,139	8,190	313	14,218	3,481	2,581	57,462

* 306 head of stockers to United States.

† 323 head of stockers to United States.

Stock Shipments.

SHIPPING POINTS	INSPECTORS	EXPORTS				LOCAL SHIPMENTS			
		East		West		Cattle			—
		Cattle	Horses	Cattle	Horses	Stockers to Range	Others		Horses
Weyburn.....	W. H. Hunt.....	72							
Langenburg.....	Chas. M. Langer ..	119	29						
Balgonie.....	J. R. Agar.....	105				159	4		
Alameda.....	A. R. Hopper.....	84							
Wapella.....	G. H. Morrison.....	16							
Wolseley.....	G. H. Hurlbert.....	56				563	10		
Fleming.....	L. Galbraith.....	28				382	18	7	
Broadview.....	Jos. Brennan.....	58				232			
Grenfell.....	J. S. Dickson.....	58				1,036	62	2	
Saltcoats.....	W. B. Smithett.....	481							
Oxbow.....	H. Paine Depty.....		28						
Qu'Appelle Stn.....	J. A. Lidgate.....	812				717	77	8	
Churchbridge.....	B. D. Westman.....	332				136			
Yorkton.....	E. V. Sinipson, V.S.	2,966							
Whitewood.....	Wm. Gemmell.....	687				593	34		
Estevan.....	John Ellis.....		23				40		
Red Jacket.....	Blake Anderson.....								
Moosomin.....	R. Stewart.....	*354	2	82		560	17	1	
Lumsden.....	A. S. Balfour.....								
Manor.....	W. G. Davis.....	214							
Arcola.....	J. G. Hopper.....	129							
EAST ASSINIBOIA.....		6,611	73	82		4,378	262	18	
Moose Jaw.....	James Thompson.....	+348				225	70		
Regina.....	S. F. Callender.....	585	94			406	67		
Swift Current.....	Wm. Millburn.....	2,143	21			467		143	
Maple Creek.....	W. A. Douglas.....	2,969	208	151		1,050	82	260	
Medicine Hat.....	J. H. G. Gray.....	2,050	204	76	8	1,500	1,073	497	
Dundurn.....	C. E. Goode.....	1,227				500			
WEST ASSINIBOIA.....		9,322	527	227	8	4,148	1,292	900	
Red Deer.....	A. B. Nash.....			318		74	34	3	
Innisfail.....	H. A. Hetherington.....			32	3		79		
Edmonton.....	W. R. Harvey.....			76		230	60		
Lacombe.....	A. M. Burdick.....		21	68		29	277	2	
Wetaskiwin.....	J. E. Miquelon.....	36		510		527	432		
Ponoka.....	A. Reid.....					10	19	3	
Leduc.....	C. W. Shepperd.....			12		39			
Olds.....	W. Dean.....			238	5	220	182		
NORTH ALBERTA.....		36	21	1,254	8	1,129	1,083	8	
Okotoks.....	J. Patterson.....	149		108			65	85	
Coutts.....	H. Tennant.....								
Morley.....	F. Ricks.....	293		138					
Macleod.....	R. G. Mathews.....	509	1,297	369	45	548	38	530	
Gleichen.....	C. F. M. Brooke.....	850	572	167		315	19	132	
Pincher Creek.....	J. Herron.....	1,272	147	102	90	1,000	133	8	
Cochrane.....	W. B. Elliott.....	428	68	946	24	94	4	40	
Clarisholm.....	C. Sharples.....	892	72	552			59	118	
Lethbridge.....	Thos. Scott.....	5,382	459	33	6	637		82	
High River and Cayley	W. H. Todd.....	3,366	243	1,485	13		507	359	
Calgary.....	R. A. James.....	490	660	2,727	119	452	19	301	
Crowfoot.....									
SOUTH ALBERTA.....		13,631	3,518	6,627	297	3,046	844	1655	

Stock Shipments.—*Continued.*

SHIPPING POINTS.	INSPECTORS	EXPORTS				LOCAL SHIPMENT			
		East		West		Cattle			—
		Cattle	Horses	Cattle	Horses	Stockers to Range	Others		Horses
Rosthern.....	J. H. Klassen.....					132			
Prince Albert.....	Wm. Plaxton.....	540				1,299			
Duck Lake.....	W. J. Campbell.....	173				86			
Saskatoon.....	J. W. Garrison.....	1,260							
SASKATCHEWAN.....		1,973				1,517			

* Including 306 Stockers to United States.

† Including 323 Stockers to United States.

HIDE INSPECTION.

As indicated in last year's report, the work of examining butchers' records has been performed by the North-West Mounted Police, and I understand that no infringements of the Ordinance have come to the notice of that force during the year.

SHEEP.

To Southern Alberta belongs the honour of having given birth to the sheep industry of the Territories, the first sheep ranche having been located there. Early in the eighties Messrs. Andrew Wallace and Thomas Johnson brought in the first shipment of sheep from Montana to Maple Creek, and in 1885 the Canadian North-West Coal and Colonisation Company imported their Merino flocks from the United States to Western Assiniboia. In 1886 Mr. W. Nicholls located near Walsh with about 1,000 ewes. Everything prospered beyond expectations until the winter of 1892-3 when, owing to an insufficient supply of hay, very considerable losses were sustained by the breeders then in business.

During the early history of the sheep industry of the Territories the only market in sight was Winnipeg. A few shipments of mutton wethers were made to Great Britain, but the venture did not turn out very satisfactorily. The sheep apparently were everything to be desired, from a standpoint of breeding and size, but the British market demanded much better conditioned mutton than it was found possible to produce by range feeding. When the Kootenay District in British Columbia began to attract the attention of capital in 1894-5, a new and valuable market for mutton became available. The opening of the Yukon gold fields also had a very marked effect upon the value of mutton. Two-year-old wethers had previously been sold at from \$2.50 to \$2.75 per head and breeding stock and lambs hardly commanded any value.

The foundation of the early flocks was Merino, principally imported from the States of Montana and Oregon. Owing, however, to the demand for mutton, breeders have found it profitable to cross with the Down breeds. The result has been a considerable increase in the size of range sheep and almost a total elimination of the Merino characteristics. As an instance, it might be mentioned that a recent large shipment of mutton sheep, sold by weight in Western Assiniboia, averaged 130 pounds per head.

The principal market for Territorial grown mutton is at present the Province of British Columbia and the Yukon Territory. Some exportations are also made to the Province of Manitoba. The requirements of that Province are not, however, very considerable but, with the large influx of farmers, the growth of urban population, the gradual acquirement of a taste for mutton and the unmistakeable decrease in the sheep stock of that Province, it is probable that Manitoba may in time become a valuable market for Territorial mutton. During the past year some 1,300 sheep were imported from Ontario to Manitoba while the Territories supplied 4,128 head, making a total importation of 5,428 head, the remainder of the mutton consumed in the province being raised at home. The markets in British Columbia and the Yukon are susceptible of some expansion, as considerable mutton is now being brought in from the United States and the Colony of New South Wales which might be supplied from the Territories. It is, however, probable that within a very few years there will be a surplus of mutton to be disposed of outside of Canada and the Territories will then be forced into an export business. It is for that reason of peculiar interest to consider the requirements of the British markets in the way of mutton. As before stated, the early exportations to Great Britain were not successful simply owing to the fact that the sheep were not in the proper condition. It is therefore quite evident that when the time of surplus production comes Territorial flockmasters will have to go in for grain feeding, or contrive to have their sheep fed in the Provinces of Manitoba or Ontario prior to exportation.

I commented in last year's report upon the advisability of our farmers acquiring small flocks and of providing woven wire fence enclosures, in order that the breeding of sheep might become more general throughout the Territories. In the course of a recent experiment respecting the grazing of sheep and the carrying capacity of forage crops, one hundred South Downs were grazed on twelve acres of land from the 15th of May until after harvest. Any number of instances can be quoted where 12 to 15 lambs per acre have been comfortably and satisfactorily grazed on rape for several months. Rape has been found a capital pasture plant for sheep and arrangements can conveniently be made to secure a succession of rape crops for fall feeding. It is generally found advisable to allow sheep pasturing on rape or similar succulent forage a run on ordinary grass pasture as well, in order to keep them in better health.

Mr. J. Knight, of Raymond, Alta., the promoter and owner of the sugar beet factory at that point, is said to be making arrangements to bring 37,000 sheep over from the United States. A lease of 250,000 acres of land from the Dominion Government has been secured. It is stated on good authority that over 60,000 sheep were brought into Southern Alberta during the past year.

The difficulties between the cattle and sheep men culminated in the appointment of a commissioner by the Dominion Government for the purpose of enquiring into and reporting upon the grievances of both, who took evidence at various points, but so far the report has not yet been given to the public. It is understood that the sheep men claimed the present grazing and lease regulations were not suitable for their purposes. It is evident on the surface that the industry is at present suffering from many drawbacks. Under your direction an invitation has been issued to all Territorial flockmasters to meet at Calgary during the month of May next for the purpose of forming a Territorial Sheep Breeders' Association. It is felt that the time has now come when the sheep men of the Territories ought to organise in order to have some official mouthpiece through which to make their requirements and grievances known.

WOOL MARKET.

Without laying claim to understand or to be able to explain satisfactorily the apparently unreasonable and erratic fluctuations of the Canadian wool market, I will attempt to briefly survey the present situation so far as it affects Territorial values. An official estimate made by this Department of the sheep stocks in the Territories, in the Departmental report for 1899, places the total number of breeding ewes in the country at some 121,000. Adding rams, mutton wethers and lambs, the figure approached 236,000, which would warrant an estimate of the annual wool clip of about 180,000 fleeces, making in ordinary years somewhat over a million pounds of wool. The total sheep stock of Canada at the present time is probably less than 2,500,000 head. Estimating a clip of five pounds all round, the annual clip for the whole of Canada would be about 11,000,000 pounds, so that the Territorial production is over one-eleventh of the whole clip of the Dominion. Canada's export for 1900 was 2,181,000 pounds and imports for the same period amounted to 8,000,000 pounds, which would lead to the inference that some 17,000,000 pounds of wool are required annually for home manufacture.

Generally speaking, the Canadian fleeces are coarse, and complaints have been made that we have not in Canada proper machinery available in the woollen mills for the successful manufacture for the home grown article. There does not appear to be any reason why the Canadian cross bred wools should only be utilised for the manufacture of blankets and certain grades of yarns. An extension of the scope of manufacturing the home grown wools would, it is claimed, materially increase prices.

There has been in recent years an enormous decrease all over the world in the production of fine wools and a corresponding increase in the output of coarse and cross bred wools. This development may be almost entirely ascribed to the perfecting of the dressed meat transportation arrangements between the Australian Colonies and Great Britain. The following schedule will give some idea of the expansion of the frozen meat trade of the Colony of New Zealand. Equal progress has been made by the various States of the Australian Commonwealth,

New Zealand Exports of Frozen Meats.

	lbs.		lbs
1882	1,707,328	1891	110,199,082
1883	9,853,200	1892	97,636,557
1884	28,445,228	1893	100,262,453
1885	33,204,976	1894	116,729,104
1886	38,758,160	1895	128,039,522
1887	45,035,984	1896	122,887,818
1888	61,857,376	1897	151,374,309
1889	73,564,064	1898	159,223,720
1890	100,934,756	1899	188,992,760
		1900	192,074,451

When we take into consideration the fact that the possibilities, even in Australia, are so much greater in the way of developing the mutton trade than that in wool, the development indicated in the above schedule will cause no surprise. Almost the entire sheep stock of the Australian Colonies was Merino bred, but rams of the Down breeds have, during recent years, been imported for crossing to such an extent that the output of fine wool has decreased very considerably in these colonies. It is estimated that the Merino blood in Australian flocks at the present time only represents about one-half of all. Ten years ago Australia distanced all other sources of wool supply, both with regard to quantity and quality, but today the first place must be yielded to the Argentine Republic. The influences inducing Australian flockmasters to muttonise their flocks apply with equal force in the Territories, where, for a number of years, a vigorous policy has been pursued by the flockmasters of eliminating the Merino blood entirely.

Wool prices throughout the Territories last year were most disappointing. As a rule flockmasters did not obtain within $2\frac{1}{2}$ to 3 cents of last year's values. It cannot, however, be satisfactorily established that dealers did not pay all market conditions justified. The American wool market is scarcely susceptible to outside influences to any considerable extent, being largely governed by home demand for woollen articles and only one quarter of the quantity of wool required for home consumption being imported from foreign countries. Still, the contracts made for wool on sheeps' back in Nevada were on the basis of only 12 cents. In view of the notoriously high tariff against foreign wool in force in the United States one would expect to find a greater difference in price between territory wool of the United States and Canada. Sales were made in the North-West Territories during the year at from 8 to $9\frac{1}{4}$ cents per pound. Dealers are reported to hold portions of last year's wool yet for which 12 to 13 cents were paid and which will not now bring 11 cents in eastern markets.

While apparently no blame can be attached to the dealers in respect to the low prices paid for wool it is probable that a great deal could be done by the producers themselves by way of increasing values. Under the head of "Crop statistics" it has been pointed out that the moment an element of vagueness surrounds the quality or quantity available of any marketable commodity, the result is invariably a depreciation in value and loss to the producer. The middle man cannot afford to take chances and is compelled, in self defence, to purchase on the safe side. While the

Territorial clip at present is probably too small to justify a consistent systematic classification and grading on the part of every flockmaster, there cannot be the slightest doubt that much could be done in the way of sorting, particularly on the large ranches. I have already referred to the necessity for organisation on the part of sheep breeders. This question is one which might with propriety be taken up and discussed by such an association. A glance at the prices quoted for Australian grown wool will show the importance of careful sorting and grading of wool. While Canadian territory wool was worth about 9 cents per pound, Melbourne quotations for medium, greasy cross bred, which will probably approach the average class produced in the Territories more nearly than any of the other grades, was quoted at from $5\frac{1}{2}$ d. to $6\frac{1}{2}$ d. per pound, or from 11 to 13 cents. It should be taken into consideration that Australia is farther removed from the world's market than Canada and that, consequently, lower rather than higher prices should be the rule. The Australian clip is sorted into at least 20 grades and it is not uncommon to see eighteen classifications quoted in United States wool market reports.

The chief reason ascribed for the low wool prices in Canada is the limited home demand, owing to the absence of local manufacturing. There can be no doubt that woollen manufacturers in Canada at the present time labour under severe difficulties, incidental to all pioneer undertakings, which are not experienced by their English and United States competitors. In Canada there is only a limited wool supply and our manufacturers scarcely know where to go for raw material when tendering on large contracts. The present strong tendency towards mutton production all over Canada will operate adversely to any solution of this difficulty.

I very much regret to state that, during the year, the Medicine Hat Woollen Mills were compelled to go into liquidation. This company was organised with a capitalised stock of \$125,000 of which \$30,000 was subscribed and partly paid up. It seems a pity that home industries of this kind should be so difficult to establish firmly in this country. Wool growers in Western Assiniboia had expected permanent relief from low prices through the operation of this institution and its failure will, therefore, be a keen disappointment to flockmasters not only there, but in every district of the Territories. A good substantial building had been erected by this company and it is to be hoped that it will not be allowed to remain idle long and that a new company will be formed which will carry the scheme through successfully.

SUMMARY OF DISTRICT REPORTS.

Eastern Assiniboia—A considerable number of small flocks are held in this district, especially in the north-easterly part, but the owners are somewhat discouraged by the depredations of coyotes. Some persons, however, seem to be able to keep sheep profitably in spite of this, and a few new men are going into the business. In 1901 the natural increase was good and compared favourably with that of the previous year. The weather was generally considered favourable for lambing, but as ewes due to lamb early are mostly in shelter this is not so important as in the purely grazing districts. Some losses have been sustained amongst the lambs

from spear grass, and also for a short time from turning them on wheat stubble in September. No disease of any kind affected the sheep. The original ewes contained blood of various breeds. There is, however, a larger representation of the long wools than in most other portions of the Territories. Pure bred rams have in a few cases been imported from Ontario or Manitoba, but the majority are home bred. The preference seems to be given to Shropshires and Leicesters. The average weight per fleece for the past season's clip has been slightly over 3 lbs., and the price received a fraction over 8 cents. A considerable quantity of wool has been spun by the Doukhobors and a fair profit realised. Lambs averaging 90 lbs. in September have been sold for consumption at $3\frac{1}{2}$ to 4 cents per pound, while shearling wethers brought $3\frac{3}{4}$ cents.

Western Assiniboia.—This is the portion of the Territories where the sheep interests centre. The number of flockmasters has increased considerably during the year by new breeders from Montana and elsewhere locating. The rate of increase has varied very much in different flocks. A number have placed it at 10 to 15 per cent. less than last year and yet one of the largest holders reports 20 per cent. better increase. Some flocks of ewes were affected by abortion to a considerable extent, the loss in one case being as high as 25 per cent. The weather for lambing was reported as on the whole favourable, although cold and wet at the start. The usual losses from coyotes occurred and quite a few from spear grass. Wet weather caused a certain amount of foot rot, and there was a small loss in the vicinity of Maple Creek, supposed to have been the result of eating larkspur. The sheep on one ranch at Swift Current were affected by anthrax and about three thousand died, some of these deaths being due to the inoculation of the flocks by the veterinary officials. The treatment, however, soon had the effect of checking the disease. A report from Willow Bunch says that $3\frac{1}{2}$ per cent. of a flock there died from grubs in the head. Although many of the flockmasters report the average weight per fleece as slightly better than in 1900, the figures given make it less by half a pound, namely $5\frac{3}{4}$ lbs. The price received for this year's clip is less by 2 to $3\frac{1}{2}$ cents than was realised the previous year, and would probably average about $8\frac{1}{2}$ cents per pound. The foundation stock of the flocks in this district was largely Merino and has been graded up for some years with Shropshires and Oxfords, which latter breed now furnishes 75 per cent. of the rams used. These are mostly imported from Ontario but a few have been raised in Alberta and Montana.

Northern Alberta.—The number of persons keeping sheep in this district is growing less each year. The flocks here are mostly small, although there are some good bunches held near Carstairs under ranching conditions. The natural increase was about the same as in former years, and weather was very favourable for lambing. During the summer, foot rot, occasioned by the wet season and spear grass, proved troublesome. Coyotes are reported to be very troublesome all through the district. The weight of the average fleece in the clip from the larger bunches was from 5 to 6 lbs., while a few pounds more would be taken from the smallest flocks in which long wool blood prevails. In the former the original ewes were of Merino breeding and have been crossed with Oxford Down and Shropshire rams, some of which have been brought in from Ontario. The price of wool has ranged from 6 to $8\frac{1}{2}$ cents, being from 1 to 4 cents less per lb. than received for the previous year's clip.

Southern Alberta.—A few additions have been made to the number of flockmasters during the past season. The weather was favourable for lambing and the increase slightly better than that of the previous year. The flocks are mostly of Merino extraction, and the rams used are Merinos from Montana and Oxfords and Shropshires from Ontario. A few only are of local breeding. There has been some slight trouble from hoof rot and some flocks suffered a little more than usual from spear grass. The smaller bunches have been troubled by coyotes to a considerable extent. A few losses occur annually from poisonous weeds. The weight of the average fleece was a fraction over 7 lbs., being in some cases a pound less than in 1900. The price received for wool has been from $2\frac{1}{2}$ to $3\frac{1}{2}$ cents less than in the previous year and would average about $9\frac{1}{4}$ cents.

Saskatchewan.—It is evident that the number of flocks in this district are diminishing at a rapid rate from year to year, principally owing to the difficulty of getting new blood and to the depredations of coyotes. No diseases were prevalent during the past year. The weather was considered favourable for lambing and the increase was about the same as that of previous years. The majority of flocks contain considerable Merino blood and are being bred to Shropshire or Oxford rams most of which were imported from Ontario or Manitoba, but grades are largely used owing to the prohibitive cost of bringing in single head shipments of pure bred rams. The wool clip averaged slightly lighter per fleece than in 1900 and the price per pound $\frac{1}{2}$ to 1 cent lower.

IMPROVEMENT OF SHEEP.

It cannot be denied that, leaving Western Assiniboia and the Lethbridge district out of the question, the sheep industry of the Territories is today in a deplorable state and flocks are rapidly decreasing in numbers, particularly in Northern Alberta, Eastern Assiniboia and Saskatchewan. One of the chief obstacles is undoubtedly the difficulty of obtaining improved rams. The local production of pure bred rams is insignificant. Outside of a few small pure bred flocks in Northern Alberta, the Calgary district and Western Assiniboia, no pure bred rams are being produced in the Territories. This means that at points where pure bred rams are not imported in carload lots, which are practically confined to Maple Creek, Medicine Hat and possibly Lethbridge, flockmasters wishing to purchase such animals must have them carried by express from Ontario or Manitoba, or take their chances of having them included in settlers' cars. As rams are not required in the Territories until the month of December, the latter means of transportation is a most uncertain one. Many cases have come to the notice of the Department where ruinous express charges have had to be paid on rams carried between Ontario and western points, and very many more cases where grade rams of inferior individuality have had to be used owing to the prohibitory transportation rates. In many of the small flocks in Saskatchewan, Eastern Assiniboia and Northern Alberta grade rams are today being used exclusively.

I would strongly recommend that the Department should make a level offer to all flockmasters in the Territories to take delivery of from one

to three pure bred rams, purchased by any Territorial sheep breeder at any point in the Provinces of Ontario or Manitoba, and to deliver them at any railway point in the Territories at a low uniform rate. The Canadian Pacific Railway Company might be approached with a view to obtaining free transportation for such a shipment. This privilege could be extended to Territorial flockmasters somewhat along the same lines as those adopted by the Department in connection with the encouragement of the importation of pure bred cattle.

SWINE.

I am pleased to be able to report that the importation of live hogs from outside points is gradually approaching the vanishing point. Only a small shipment of some 147 head was made from Ontario to the Territories during the year, compared to nearly 2,000 head during 1899 and 368 head during 1900. This, however, does not by any means represent the total quantity of pork brought in as the bulk of our importations is in the shape of cured pork. It is estimated that about four and a half million pounds of pork is required per annum to supply the home demand of the Territories and, judging by the trade returns, we are not within measurable distance of supplying this. During the past year some eleven million pounds of pork were imported from the United States to Canada, and it is safe to state that the bulk of that went west of Lake Superior. No less than \$327,000 worth of bacon and hams were brought into British Columbia alone from the neighbouring republic. The following schedule shows prices paid for live and dressed pork at Winnipeg and Edmonton for each month of the year for the years 1899, 1900 and 1901.

MONTH	WINNIPEG						EDMONTON					
	Live			Dressed			Live			Dressed		
	1899	1900	1901	1899	1900	1901	1899	1900	1901	1899	1900	1901
	per 100	per 100	per 100	per 100	per 100	per 100	per 100	per 100	per 100	per 100	per 100	per 100
January	\$4 75	\$4 75	\$5 12½	\$6 25	\$6 50	\$6 25	\$4 25	.....	\$4 50	\$5 75	\$6 12½	\$5 75
February	4 75	4 75	5 25	6 25	6 50	6 41½	4 25	.....	4 41½	5 75	6 12½	5 75
March	4 75	5 00	5 37½	6 25	6 50	6 75	4 25	.....	4 62½	5 75	6 12½	5 75
April	4 75	5 00	5 25	.....	.....	6 75	4 25	\$5 12½	4 75	5 75	.....	5 75
May	4 75	5 25	5 68½	.....	.....	7 50	4 25	5 12½	5 06½	5 75	.....	5 75
June	4 75	5 00	5 87½	.....	.....	8 25	4 25	5 12½	5 00	5 75	.....	5 75
July	4 75	5 00	6 00	.....	.....	8 25	4 62½	5 12½	5 00	6 00	.....	5 75
August	4 75	5 00	6 37½	.....	.....	9 00	5 25	5 12½	5 18	6 75	.....	5 75
September	5 12½	5 25	6 68½	.....	.....	9 41½	5 25	5 12½	5 41½	6 75	.....	6 25
October	5 12½	5 50	6 87½	5 75	.....	9 00	4 75	5 12½	5 41½	6 25	.....	6 25
November	4 75	5 25	6 25	5 75	6 50	8 62½	4 75	.....	5 50	6 00	6 12½	6 25
December	4 75	5 00	6 37½	5 75	6 50	7 37½	4 50	.....	5 50	5 75	6 12½	5 50

A glance at the above figures reveals the fact that western producers do not appear to get full value for their pork. Winnipeg prices are in almost every instance above those paid locally, both for live and dressed pork. There would not appear to be any particular justification for this as a large proportion of the bacon cured in Winnipeg is disposed of in British Columbia, where it comes into competition with the article cured in Alberta. In view of the advantages of a shorter haul it would appear that Territorial buyers should be able at least to pay as high as the Winnipeg quotations.

It is undoubtedly a fact that the tendency on the part of the average farmer in the Territories is to belittle the bye products of the farm. Farmers in the Territories do things on a larger scale than elsewhere, their farms are more extensive, their live stock more numerous, their profits greater; in fact, it is not to be wondered at that the small sources of revenue on the farm ultimately fail to appeal to them. Along the Prince Albert line, for instance, we are face to face with the anomalous position of a very considerable import of United States and Eastern bacons for the Hudson's Bay Company's northern trade and the lumber camps, and it is asserted that an enormous quantity of pork cured in eastern establishments goes into the hands of Saskatchewan farmers at prices ranging from 15 to 18 cents per pound. Although such a position of affairs seems incredible there can be no doubt that it exists there as well as in Assiniboia and Southern Alberta.

While much yet remains to be done there are unmistakeable signs that we are rapidly approaching the point where the home trade will be supplied. Curing establishments have been put up at central points and everything points to the Territories supplying its own requirements and those of British Columbia as well within a very few years. After that we will be face to face with catering to an export trade for our surplus and, in view of our unequalled facilities for the raising of coarse grains and our distance from markets, it does not require prophetic vision to foretell the inevitable occurrence of this development within a comparatively short period.

If we realise that we are destined sooner or later to do an export business in swine products it will behoove our breeders to lose no time in studying closely the demands of the British trade and, in view of the fact that those requirements are practically identical with those of our home market, possibly excepting the northern trade, there is all the more reason why every legitimate effort should be made by this Department and by individual breeders to initiate a vigorous campaign having for its object the development of our breeding stock along the proper lines. There can be no doubt that we are face to face with exceptional difficulties in this direction in the Territories. An enormous immigration has of recent years been pouring in from the United States, and those who are in a position to know claim that past performances are merely as a drop in the bucket compared to what is coming. These settlers all bring with them more or less live stock and amongst it usually one or two favourite brood sows of the breed of hogs they have handled in the United States, which are totally unsuited to our conditions, or, what amounts to the same thing, a deep rooted belief in the lard breeds and a firm conviction that the bacon breeds should properly be classed with the "razor backs." This state of affairs was prominently brought to light when the Department undertook to carry out practical work with a view to improving the swine stock of Saskatchewan and Northern Alberta, where the bulk of the United States settlement at that time was to be found. Applications received from parties wishing to purchase breeding stock were largely confined to the Chester White, Poland China and Duroc Jersey breeds.

Those who have given the subject any thought are aware of the fact that the swine industries of the United States and Canada have been developed along entirely different lines. Owing to the abundance of cheap corn and the extensive steer feeding operations in the corn growing States American breeders have found it most profitable to raise hogs on

a large scale and as a bye product. Two hogs usually follow each steer in the feed lot, the steers are fed whole corn and the hogs fatten on the undigested grain. The process is as simple as it is profitable. While hogs can be raised in this manner at a minimum of expense, the product is of a very inferior class and only finds a market in the lumber and mining districts, and amongst the poorer classes in Great Britain. On the other hand, the Canadian hog has to be raised on more expensive and less fat forming feeds, and by virtue of these conditions it would be folly for any Canadian feeder to attempt to rival United States feeders in the production of cheap mess pork. Eastern Canada has of recent years wisely devoted her entire energies towards the production of a superior bacon hog, and western farmers cannot learn the lesson and do likewise any too soon. To put the matter in a nutshell, the United States exports annually over three million pounds of 8 cent, 9 cent and 10 cent inferior corn fed bacon to Great Britain, while Canada, Ireland and Denmark send two million pounds of 14 cent bacon (Wiltshire sides) to the same market.

It is only natural to conclude that it is going to be a very difficult matter to overcome the prejudices of the bulk of the American settlers in Alberta and Saskatchewan against the bacon hog. It can best be done by vigorous educational work. Once they understand the most profitable utilisation of our feeding materials, and are brought to realise that the taste and requirements of the public in respect to bacon and pork is rapidly undergoing a change in favour of leaner meat, and that the market which has hitherto existed for animal fat is now being glutted with mineral and vegetable oils, thus further reducing the demand for lard they will not be slow to accept the situation.

I have taken occasion in previous reports to refer to the matter of pasturing swine within limited enclosures. While in Eastern Canada on my return to the west from the Pan American Exhibition, I had the privilege of visiting Guelph and other points in company with Mr. F. W. Hodson, Dominion Live Stock Commissioner, for the purpose of investigating the experiments which were then being carried on under his direction with respect to the grazing of hogs on rape and tares. A careful enquiry on the ground into the results up to date fully confirmed me in the opinion that a general adoption of the plan of grazing hogs within limited enclosures all through the west would speedily result in an enormous expansion of the swine industry and place the west in the front rank of bacon producing countries. Hog raising methods have during recent years undergone a complete revolution all over the American continent. The old system of close penning hogs and carrying feed to them two or three times a day is now a thing of the past, and has been discarded for a cheaper, cleaner and healthier practice. Enclosures of several acres in extent, surrounded by hog proof wire fences and partly seeded down with nutritious forage plants, thus enabling the swine to gather the bulk of their feed, are now utilised by all advanced farmers. These enclosures are provided with a natural water supply or with barrels, which are filled once or twice a week only, and supplied with a cheap and ingenious watering device inserted near the base, provided with a float, which admits only a small quantity of water at the time, and thus prevents waste and evaporation. It is everywhere recognised that hog raising must be prosecuted on a more extensive basis than hitherto and the labour connected with the care and feeding of the animals reduced to a

minimum. It is of interest in this connection to quote the following from a recent issue of "The Breeders' Gazette," one of the most conservative and reliable agricultural journals published on the continent of America:

The rape plant is proving itself a great friend to the stockman, especially the swine raiser. Rape may be sown any time from April until the middle of August. It is a rutabaga run to top. The seed costs but a trifle and may be sown broadcast upon freshly ploughed land when the plants grow without cultivation, or the seed may be planted in drills and get the benefit of tillage. Be sure to order Dwarf Essex forage rape seed lest the seedsman supplies you with bird seed rape—a worthless plant. When the plants are knee high turn in the pigs or sheep. This forage rape is an old one in England, has long been cultivated in Canada and was introduced to the United States through our experiment stations. The Gazette urges every hog raiser and flockmaster in the Mississippi Valley to sow a patch of rape this season and give the stock the opportunity of utilising it. In conjunction with clover it affords variety of green forage and puts animals in splendid condition for utilising whatever grain may be fed. The rape plant alone will furnish nearly enough food to support the pig, leaving all the grain for growth and fattening.

Rape grows luxuriously in every portion of the Territories.

IMPROVEMENT OF SWINE.

There is every indication of the fact that the shipment of improved breeding sows and pure bred boars of the bacon type sent into Northern and Central Alberta a couple of years ago has already exerted a beneficial influence. It is reported that not alone is the Edmonton district supplying all local requirements, but that an extensive export business is now being done, and the time is not very far distant when the local production of pigs will keep the Edmonton pork packing establishments fully occupied. The bacon industry is one which lends itself readily to co-operative effort and to improvement by means of such work as the Department has undertaken. Swine are prodigious breeders and improvement in quality and numbers, through well selected importations, is quickly accomplished. It is a significant fact that in the early eighties Danish bacon sold in the British market for 4 cents per pound less than the Irish article and that today it commands almost the same price as the latter. This improvement has been brought about solely by intelligent direction and by the untiring efforts of the Danish Royal Agricultural Society, which is generously supported by the Government. A large number of boars of the Yorkshire breed have from time to time been imported through the agency of this society and placed at the disposal of the smaller farmers at a nominal fee. While this improvement was going on in Denmark, Ireland was by no means idle. The Bacon Curers' Association of Ireland spent somewhere about \$20,000 in supplying selected boars of the bacon type to their patrons for free service. Regular inspectors were appointed to report upon the condition of these boars and to keep the producers in touch with the curers. While schemes of that kind are scarcely feasible under conditions as they exist in this country, it serves as an indication of what the possibilities are in this direction. It is a standing reproach to our agricultural societies that, with one or two exceptions, they have not seen fit to interest themselves in live stock improvement along co-operative lines. Expense may be argued as an excuse for these societies not taking up in

a practical way the improvement of horses and cattle, but no such argument applies in connection with the improvement of swine which furnishes a legitimate field for efficient and much needed work on the part of such societies.

Early in the year representations were received from one or two points in Saskatchewan to the effect that there was a large surplus of feed grain in the hands of the farmers which could not readily be disposed of and that there was an insufficient supply of breeding and store swine stock. The Department was urged to take the matter up and, under your direction, negotiations were opened with the Canadian Pacific Railway Company and Messrs. Osler, Hammond & Nanton, agents for the Qu'Appelle, Long Lake & Saskatchewan Land Corporation, with a view to securing the co-operation of these concerns which are largely interested in that district. I am pleased to be able to report that both companies met the Department in a liberal, even generous manner. Detailed arrangements having been satisfactorily completed, the following circular was issued, explaining the manner in which the Department purposed carrying out its project:

Arrangements have now been completed between the Territorial Department of Agriculture, the Canadian Pacific Railway Company and the Qu'Appelle, Long Lake & Saskatchewan Land Corporation whereby measures will be taken during the month of April to improve the swine stock in Saskatchewan. The Canadian Pacific Railway has granted free transportation for a shipment of hogs from Ontario to the West, the Qu'Appelle, Long Lake and Saskatchewan Land Corporation has made the Department a guarantee against loss up to \$500 for the purpose of furthering the object in view and the Dominion Live Stock Commissioner has agreed to co-operate to the extent of purchasing and gathering the animals composing the shipment free of charge.

In deciding upon the scheme for the improvement of cattle in the Territories, the Department made it its sole aim to facilitate through reduced cost and convenience of transportation, the importation of superior sires only, knowing that grade female stock of fair quality was already in the country. The improvement of swine must, however, be dealt with on a somewhat different basis. In the first place the radical departure from the proper type and the notorious lack of quality of the average brood sow one sees in the West, calls for an increased number of pure bred boars of high individual merit and, secondly, the wholly insufficient number of sows now in the hands of the farmers should be augmented by the importation and distribution of a number of well bred selected young females.

It is now proposed to procure in the Province of Ontario seventy-five brood sows of the class described above, due to farrow during the coming spring, and fifteen boars of the Berkshire and Yorkshire breeds, and have them brought West as soon as possible. Upon the arrival of this shipment public auction sales will be held at Prince Albert and Rosthern. A low upset price will be placed on each individual head, representing its cost price in Ontario, below which positively no sale will be made.

The value of a first class sow in other portions of the Territories, due to farrow within about a month would, at present prices, range from \$22 to \$30. It is expected that the Department will be able to offer such sows at a minimum price of from \$16 to \$20 according to weight and quality.

Not more than one boar and two sows will be sold to any one person, and all purchasers will be required to sign a simple form of agreement before taking delivery setting forth that they are *bona fide* residents of the Territories, and that they will neither slaughter nor sell the said animals for a period of two years from the date of sale without first obtaining permission from the Department of Agriculture at Regina.

Representations were also made to the Department by residents in certain portions of Saskatchewan to the effect that, owing to the large quantity of injured grain in the hands of the farmers there and the great scarcity of hogs, steps could advantageously be taken by this Department to bring in store hogs for feeding purposes as well as breeding stock. The railway company was immediately invited to co-operate to the extent of free transportation of such stock from Ontario, but it could not see its way clear to grant this concession. The best rate that could be obtained from Toronto was 51 cents per hundred, based on carload weight. In view of the fact that store stock could not at that

time be purchased for less than 6 to 6½ cents per pound (which was a shade above the market price in the Territories) and that \$1.85 per head had to be added for transportation, feed and attendance, it was felt that the Department would not be able to sell such stock to farmers so as to yield them sufficient profit to warrant them feeding up their wheat in this manner. Consequently the Department was reluctantly compelled to give up the idea of bringing in store pigs and to confine its attention entirely to the importation of high class breeding sows and boars, which it is hoped will result in permanent benefit to the district.

In order to bring the matter more prominently before the public a number of meetings were organised along the Prince Albert line taking in Saskatoon, Osler, Rosthern and Prince Albert, which were addressed by Mr. Andrew Graham, of Pomeroy, one of the leading swine breeders of the Province of Manitoba, and the undersigned. The whole situation was fully discussed at these meetings, which were largely attended, and at Prince Albert and Rosthern considerable enthusiasm was displayed. Some objection was taken to the fact that the animals would be put up for sale at public auction. The majority of the farmers who were in need of improved hogs would much prefer to place their orders with the Department and have the sows delivered to them on arrival. Such a course would, it was explained, lead to all sorts of trouble and, as you are aware, it was finally decided to adhere to the principle of putting the animals up for sale by public competition.

BRANDS.

The following statement shows the transactions of this branch of the department up to the end of the past year.

Transfers.....	{ 1899.... 132 1900.... 165 1901.... 222
Changes.....	{ 1899.... — 1900.... 27 1901.... 20
Searches and extracts.....	{ 1899.... — 1900.... 35 1901.... 42
Total number of old brands reallocated.....	3,228
Cattle brands allotted.....	{ 1898.... 2,111 1899.... 1,466 1900.... 1,508 1901.... 1,689
Total.....	6,774
Horse brands allotted.....	{ 1898.... 941 1899.... 821 1900.... 886 1901.... 947
Total.....	3,595
Total brands on record up to 31st December, 1901...	13,597
Total transactions in 1898.....	6,280
“ “ 1899.....	2,419
“ “ 1900.....	2,621
“ “ 1901.....	2,920
	<hr/> 14,240

The system of allotting cattle brands now in vogue in the Territories has come in for considerable criticism from time to time. It is, however, generally admitted that the only legitimate objection which can be raised against it is that the brands as now allotted are unnecessarily large. These cattle brands uniformly consist of two characters with a bar, quarter circle or half diamond above or below and are to all practical purposes "two character" brands. The largest ranching concern in the world, the Matadore, uses a three character brand by choice, and the Montana brand book teems with three-character brands, principally owned by extensive cattle outfits. A little reflection will convince anyone of the superiority of a fairly large brand over one consisting of only one character. Presumably the object of securing sole ownership to a brand is to protect the property upon which such brand is to be placed. In other words, the most important desideratum is that such a design should not readily lend itself to criminal manipulations, while the question of simplicity of outline should only be accorded secondary consideration. It stands to reason that the simpler the design the greater the opportunities for successfully altering it and that, consequently, the greatest element of safety lies in a moderately large brand. No method of removing any portion of a fire brand has yet been invented by "stock rustlers;" their work is performed entirely by adding to it.

The steady expansion of the work of this branch bears ample evidence of the growth of the cattle industry throughout the Territories. During the past year 2,636 brands, involving a correspondence of some six thousand outgoing communications, have been put through the books, an increase over last year of 242 and of 319 over the year previous. The clerical work involved in making searches is daily growing, and it is safe to state that considerably more than twice as much time is now consumed in searching the records in connection with new applications as was required during the first year of the Department's administration of this work. It should be understood that every new brand added to the books immediately becomes a source of perpetual expense and, also, that while the recording of brands with a system of only three or four thousand designs on the books may be a fairly simple proposition, when the number approaches fourteen thousand the problem grows in intricacy out of all proportion to the actual increase in number. The indexing of designs and names of brand owners is a matter of the utmost importance. The system formerly followed in this branch of the Department, although fairly satisfactory at the time it was organized, was found rather cumbersome owing to the abnormal increase in the number of new brands and brand owners, and it was consequently thought advisable to adopt the card index system and to consolidate the indexing of the brand files and names of owners, which it was found could conveniently be accomplished. The result has been a considerable saving in work and increased efficiency. The index record of brand designs is also being improved upon. With this object in view a patent adjustable index has been obtained, the system of which is being reconstructed on a plan devised in this Department, which it is considered will very much simplify the complex character of this work.

In the course of correspondence I have had with Mr. W. G. Preuitt, the Recorder of Brands in the State of Montana, where the largest number of United States brands are recorded, I have been able to make a very interesting comparison between our brand work and that of

Montana. The allotments in the State of Montana were 1,600 brands for the year 1900, while in the Territories our allotments for the same period were 2,394. I am not yet in receipt of the report of the Montana Stock Commission for 1901, but I feel certain it will be found that the difference in the number of allotments for the past year will be even more marked than for the year preceding.

Among the amendments to the Criminal Code passed at the last session of Parliament is one the effect of which is to throw the burden of proof of rightful ownership upon the person in whose possession any animal bearing the registered brand of another person is found. This Section (707a) reads:

In any criminal prosecution, proceeding for trial, the presence upon any cattle of a brand or mark, which is duly recorded or registered under the provisions of any act, ordinance or law, shall be *prima facie* evidence that such cattle are the property of the registered owner of such brand or mark; and where a person is charged with theft of cattle, or with an offence under paragraph (a) or paragraph (b) of section 331a respecting cattle possession by such person or by others in his employ or on his behalf of such cattle bearing such a brand or mark of which the person charged is not the registered owner, shall throw upon the accused the burden of proving that such cattle came lawfully into his possession or into the possession of such others in his employ or on his behalf, unless it appears that such possession by others in his employ or on his behalf was without his knowledge and without his authority, sanction or approval.

Applications for brands are frequently made by half breeds who are living and taking treaty on Indian Reserves. These persons are not permitted by The Brand Ordinance to record a brand. They are, however, provided with a brand by the Indian Department, viz.: ID, which is registered for the use of treaty Indians. In order to individualise their stock these people are in the habit of using unrecorded marks in conjunction with the recorded brand. These designs possibly do not conflict with those authorised by the Ordinance; in fact, I have reason to know that the chances of such conflict were infinitesimal until quite recently. There is, however, now a distinct tendency on the part of stockmen to utilise ear tags and hoof marks more generally, and, if this practise on Indian reserves is persisted in complications are sure to arise.

Special allusion was made in the last Departmental report to the importance of branding cattle in a position least liable to depreciate the value of the hide. These suggestions were intended to apply more particularly to the mixed farming portions of the Territories, and were to the effect that a brand placed low down on the thigh would be quite as efficient for the purpose of identification as one placed on the shoulder or ribs. The following is an extract from the "Australian Pastoralists Review" which touches even more emphatically on this subject, evidently considered one of very material importance there:

Last month a deputation from the Master Tanners' and Curriers' Association waited upon the executive of the Stockowners' Association of New South Wales in Sydney to discuss the much debated question of the branding of cattle and to obtain the co-operation of the latter association in obtaining legislative amendment of the methods at present in vogue. It was urged that the branding of cattle on the ribs or rump causes a depreciation of at least 3s. per hide, and as this is a considerable drawback to the breeder, the tanners and the exporters, the urgency of the case for the amendment of the Branding Act is self evident. The difficulty is to know how to amend the Act and retain its usefulness at the same time. It has to be borne in mind that a very large number of the cattle that are fattened and slaughtered in New South Wales are Queensland bred, and are branded with the breeder's brand, consisting of two letters and a numeral generally on the ribs. These brands are usually three inches long when put on the calf and are naturally very much larger when the calf has become a full

grown beast. It is essential that whatever system is to be adopted, the brand should be distinctly visible to a stockman rounding up cattle on the run, and we doubt very much whether a brand on the neck or cheek of a beast would be easily legible. The skin of the neck is always more or less wrinkly, and the brands would very readily blotch. Even with the large Queensland brands we have frequently seen beasts in the sale yards upon which the brands are quite indistinguishable, and although when the animal was killed and the hair taken off the hide would be found to be badly deteriorated by the brand, for practical purposes the brand was useless while the animal was alive. Generally speaking it is much easier to draft cattle by earmarks when such are used, and it seems to us that it would be worth the consideration of the Master Tanners' and Curriers' Association and the Stockowners' Association to consider whether it would not be possible to devise some system of earmarking that would obviate the branding of the hide with firebrands altogether, or at any rate reduce it to a minimum. The owner's fire brand could be put on the cheek or forearm, for use in the event of any dispute arising about the earmark. Of course the difficulty about such a system would be the comparatively few variations that can be made in earmarks. It was stated at the meeting above referred to that Australian hides are sold in the Continental and English markets at minimum values because of the brands. If this is so it is clear that there must be some system in vogue in America, Argentina, and other places where cattle are bred on an extensive scale, by which fire branding is obviated. No doubt the danger of loss by stealing is just as great in America and other places as it is in Australia, therefore the necessity of an easily workable and thoroughly effectual method of branding must exist on the great cattle ranches of Texas and the Western States as it does here. We should think it would be advisable before getting any new system of fire branding legalised here, to ascertain the system used in other parts of the world with a view of adopting the best method applicable to Australian conditions of cattle branding.

CHEMICAL BRANDING.

This subject is still engaging the attention of the Department. As indicated in the preceding year's report, samples of the New Zealand chemical branding fluid were obtained and experiments have been conducted during the year to determine the feasibility of this method of marking stock. Messrs. F. W. Godsal, of Pincher Creek, and Dr. Simpson, of Yorkton, were requested to take charge of these experiments. The former is not yet in a position to give a definite report on the matter, but the following extract from Dr. Simpson's report is not very encouraging.

I may say that the results so far have not been very satisfactory. Some brands were applied by dipping the face of the iron into the fluid and some others by means of the brush. The results were the same in both cases. It seems to me that the cauterising action is not active enough as in all cases the hair has grown out again, the roots not being destroyed in the least and leaving neither deformed hair growth, as in the case of the hot iron brand, nor a total destruction of the hair follicle and a resulting broad mark as results from the use of the chemical I have myself prepared. Of course, the cauterizing agent is, I believe, the same both in the Australian and my own compositions, the only difference being the difference in strength. However, I think it would require another season's experiments to come to any definite conclusions.

Samples of a branding fluid prepared by the Aberdeen Chemical Co., of South Dakota, U. S. A., have already been secured by the Department and will also be experimented with during the coming summer. The following recipe is said to make an excellent branding fluid. No tests have, however, been made by the Department to test its efficacy.

Barium Sulphide	16 ounces.
Coal tar	16 ounces.
Mix, then thin with	
American potash	38 ounces.
Turpentine	32 ounces.
Water	32 ounces.

Mix the barium sulphide and coal tar thoroughly, which is required by the nature of the two substances. Mix the three last named—potash, turpentine and water—so as to secure perfect fluidity and amalgamation. Gradually then incorporate the two masses.

The mixture should be well shaken while in use in order that all the chemicals may remain in suspension. It may be thinned to the proper fluidity by adding turpentine. It is claimed that it can be used by dipping the face of a corrugated branding iron in a shallow pan containing the mixture and applying it wet. It may be found necessary to clip the hair from the part of the animal to be branded.

SHEEP BRANDS.

During the past year some applications have been received for the registration of sheep brands, but there does not appear to be any immediate necessity for providing the necessary legislative machinery to deal with this question.

While on this subject it would not perhaps be out of place to touch briefly on the methods adopted elsewhere in this respect.

In countries where sheep breeding is extensively carried on great importance is attached to the proper marking and branding of the flocks. In the Queensland Sheep Brands and Marks Register the designs are not alphabetically arranged like our stock brands but are divided into "stations," of which there would appear to be about nineteen. The designs they use are alphabetical, numerical and arbitrary. The same brand is not necessarily confined to one station but can be used in connection with face brands, or ear marks, in any or all of the other stations.

Sheep are tar or paint marked on the shoulder, ribs, hip, back and rump, fire branded on the cheek and face and are marked with ear marks, composed of nicks, crops or alphabetical, numerical or arbitrary signs, punched or plied into the ear. A brand usually consists of a combined fire mark, paint mark and ear mark. It will readily be understood that there is practically no limit to the number of combinations which can be recorded under such a very elastic system.

ESTRAY AND IMPOUNDED ANIMALS.

During the year 442 estray, 223 impounded and 132 lost animals were advertised in the supplement to the Official Gazette. Some ninety-one notices of estray and impounded animals, advertised in the gazette and bearing registered brands, were sent out of the Department to the recorded owners of such brands during the year. Last year 61 captured animals bore recorded brands, which would indicate that branding with recorded brands is becoming more general in Eastern Assiniboia, where most of these animals were taken up. As pointed out in previous re-

ports, so soon as stockmen use recorded brands exclusively it will be almost an impossibility for stock to remain estray for any considerable time before the rightful owner receives notification of their whereabouts through this Department. The Department has received a number of letters from parties whose stock was restored to them by this means, expressing their appreciation of this branch of the work. The following statistical statement shows the total amount collected as well as amounts of revenue and refunds from sales of estray and impounded animals up to the end of the past year.

SALES of Estray and Impounded Animals.

YEAR	Total Amount Collected	(1) Revenue	(2) Refunds
1886-1896 (Total for 10 years)...	\$ 79 85	\$ 79 85	.....
1896-97	95 95	95 95	.....
1898-99 (16 months Dept. organised)	356 95	324 00	\$ 32 95
1900	1,137 15	588 83	548 32
1901.....	789 53	581 97	207 56

(1) This column shows actual revenue from lapsed proceeds of sales deposited to the credit of the general revenue fund.

(2) This column shows the amounts of proceeds of sales paid to the rightful owners of stock disposed of under the Estray, Entire Animals and Herd Ordinances.

I would strongly recommend that during the present year a poster be issued and placed conspicuously in every post office in the Territories containing in brief form the most important provisions of the Herd, Pound District, Estray Animals and Entire Animals Ordinances. It is quite evident that the provisions of the various Ordinances dealing with estray animals are very imperfectly understood by the majority of farmers and stockmen all through the Territories, particularly in Western Assiniboia and Alberta. A study of the statement above shows that up to 1897 only some \$80 had been collected as proceeds of sales of estrays throughout the Territories, although during the ten years preceding the provisions of the law in respect to the capture and sale of estrays had been substantially the same as they are at the present time. The effect of closer attention to the administration of the Ordinances dealing with impounded and estray animals, as a result of the organisation of the Department, is clearly brought out by this statement which shows that during the last three years no less than \$2,200 have been collected, out of which some \$800 have been returned to the rightful owners. The effect of having estray animals running at large, or in the possession of individuals who can claim no ownership to them, is very bad indeed and strenuous efforts should be made to clear the country of estrays and encourage the prompt reporting and advertising of all stock running at large throughout the country with owners unknown.

Some considerable controversy has arisen during the past year in a number of Territorial newspapers as to the provisions of the herd law. At present the Ordinance ceases to apply on the 30th day of October and animals may then run at large and trespass without being liable to impounding for damages. It has been found that during late years, when stacking and threshing operations have been delayed through unfavourable weather, an enormous amount of damage has been done

throughout the wheat growing districts of Assiniboia by stock running at large. It has been suggested that power should be vested in the Commissioner or the Lieutenant Governor in Council to extend the operations of the herd law until threshing throughout the country has been completed. Many persons engaged in mixed farming, who have acquired considerable stock, object strongly to this on the grounds that the production of live stock is of prime importance to the country and that every encouragement should consequently be afforded towards increasing the number and as few restrictions as possible placed in the way of ranging cattle and horses. It is argued that whereas it is an expensive matter to herd a bunch of cattle closely, the cost of erecting safe fences around settings and stacks is but trifling, and that farmers who have not completed their threshing by the time the Ordinance ceases to apply should be compelled to fence their stacks.

During the year a number of applications have been received from the District of Alberta for the bringing into effect of The Herd Ordinance there. This Ordinance now provides that no area lying west of Range 17 west of the Third Meridian may be brought under its operation. In lieu of this protection applicants have availed themselves of the machinery provided under The Pound District Ordinance. A new district is now being erected in the vicinity of Didsbury in Central Alberta.

In view of the many applications which have been received in the Department for information as to the location of the herd district, pound districts, etc., in connection with prosecutions under the various ordinances dealing with estray animals, it has been thought well to include in this report a full description of the areas now under operation of The Herd Ordinance and Entire Animals Ordinance, and also a description of the pound districts that have been constituted up to the 31st of December last.

THE HERD DISTRICT.

The herd district, as constituted on the 31st December last includes the following areas.

Lying West of the First Meridian—

Range 30, townships 1, 2, 3, 4, 5, 10, 11, 15, 16, and sections 1 to 24 inclusive in township 17, the whole of townships 22 and 23.

Range 31, townships 1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 16 and that portion of township 17 lying south and east of the Qu'Appelle River, the whole of townships 21, 22 and 23.

Range 32, townships 1, 2, 3, 12, 13, 14, 15, 16 and sections 1 to 24 inclusive in township 17, the whole of section 21.

Range 33, east half of township 1, the four eastern rows of sections in township 2, the east half of township 3, the whole of townships 12, 13, 14, 15, 16 and sections 1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24 in township 17.

Range 34, fractional townships 12 and 13.

Lying West of the Second Meridian—

Range 1, townships 1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, and sections 5 and 6 in township 17.

Range 2, townships 1, 2, 3, 4, 5, 6, 7, the whole of sections 1, 2, 3, 6, 7, 8, 10, 11, 12, 13, 14, 15, 18, 19, 20, 28, 29, 30 and 31; the east halves of sections 22, 23, 24, 25, 26, 35 and 36, and the west halves of sections 32, 33 and 34 in township 13, the whole of townships 14 and 15, sections 1, 2, 3, 4, 6, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 24, 25, 26, 27, 28, 35, 36, and east half of 20 in township 16 and sections 1 and 2 in township 17.

Range 3, townships 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15 and sections 1 and 12 in township 16.

Range 4, townships 1, 2, 3, 4, 12, 13, 14, 15.

Range 5, townships 1, 2, 3, 4, 7, 8, 13, 14, 15 and sections 1 to 24 inclusive in township 16.

Range 6, townships 1, 2, 3, 7, 8, 16.

Range 7, townships 2, 3, 15, 16, 17, 18, 19a, 19, 20.

Range 8, townships 2, 3, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23.

Range 9, townships 2, 12, 13, 14, 15, 16, 17, 18, 19a, 21, 22, 23.

Range 10, townships 12, 13, 14, 15, 16, 17, 18, 19a, 19, 20, 21 and fractional township 22.

Range 11, fractional township 15, the whole of township 20 and fractional township 21.

Range 12, townships 20 and 21.

Range 13, township 20.

Range 14, townships 8, 9, 16, 17, 18 and fractional township 14.

Range 15, townships 8 and 9.

Range 16, fractional township 21, the whole of township 22 and sections 1 and 25 inclusive in township 23.

Range 17, townships 15, 16, 17, 18, 19, fractional townships 20 and 21, the whole of township 22 and south half of township 23.

Range 18, townships 11, 12, 13, 14, 15, 16, 17, 18 and 19.

Range 19, townships 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 and sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16 in township 21.

Range 20, townships 11, 12, 13, 14, 15, 16, 17, 18, 19, 20.

Range 21, townships 14, 15, 16, 17, 18, 19, 20, 23, 24.

Range 22, townships 14, 15, 16, 17, 18, 19, 20, 22, 23, 24.

Range 23, townships 15, 16, 17, 18, 19, 20 and those portions of townships 22 and 23 lying east of Long Lake.

Range 24, townships 15, 16, 17, 18.

Range 25, townships 15, 16, 17, 18, 19.

Lying west of the line between townships 25 and 26 west of the Second Meridian—

Range 26, townships 15, 16, 17, 18 and those portions of townships 19 and 20 lying west of Highpound Lake.

Range 27, townships 16, 17, 18 and that portion of township 20 lying west of the Qu'Appelle River.

Range 28, that portion of township 17 lying north of the line of the Canadian Pacific Railway Company and the whole of township 18.

Range 29, township 18.

Lying west of the Third Meridian—

Range 1, that portion of section 18 township 24a lying north of the south branch of the Saskatchewan River, and those portions of sections 5, 6, 7, 8, 17 and 18 in township 42 lying west of the south branch of the Saskatchewan River.

Range 2, townships 40, 41, 42, 43a, 43.

Range 3, townships 39, 40, 41, 42, 43a and fractional township 43.

Range 4, townships 36, 37, 39, 40, 41, 42, 43, 44.

Range 5, townships 35, 36, 37, 39, 40, 41, 42 and those portions of townships 43 and 44 lying south and east of the Saskatchewan river.

Range 6, townships 36, 40, 41 and those portions of townships 42 and 43 lying east of the Saskatchewan River.

Range 7, those portions of townships 41 and 42 lying east of the Saskatchewan River.

POUND DISTRICTS.

The following areas have been set apart up to the end of the past year under The Pound District Ordinance, in addition to those formed under The Village Ordinance :

No. 1.—Those portions of townships 37, 38 and 39 in Ranges 26, 27 and 28 west of the 4th Meridian lying south of the Red Deer River. This district was constituted in 1897 but no poundkeeper was apparently appointed.

No. 2.—Sections 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33 and 34 in Township 22 Range 14 and Sections 12, 13, 24, 25 and 36 in Township 22 Range 15, all west of the 2nd Meridian; poundkeeper, Alfred Bailey of Parklands, Fort Qu'Appelle, Assiniboia. Pound on north-west quarter of section 28, township 22, range 14 west of the second meridian.

No. 3.—Sections 15, 16, 17, 20, 21, 22, the south half of section 27, the south-east quarter of the north-east quarter of section 27 all in township 47 range 27 west of the second meridian; poundkeeper, Edwin Anderson of Kirkpatrick, Saskatchewan. Pound on the north-west quarter of section 27, township 47 range 27 west of the 2nd Meridian.

BULL DISTRICTS.

Set apart under Clause (2) of Section 4 of The Entire Animals Ordinance.

District No. 1.—All that portion of the Provisional District of Alberta lying south of townships 34.

District No. 2.—Townships 39, 40 and 41 in ranges 26 and 27 west of the Fourth Meridian.

District No. 3.—All that portion of the Provisional District of Assiniboia lying west of a line which may be described as follows: Commencing at the point where the international boundary is intersected by the line between Ranges 15 and 16 west of the second meridian and following the said line northerly until its intersection with the line between townships 14 and 15; thence westerly along said line to the third meridian; thence northerly along the said third meridian to the northerly boundary of the said Provisional District of Assiniboia.

District No. 4.—All that part of the Provisional District of Saskatchewan lying west of Range 11 west of the third meridian.

District No. 5.—Townships 48, 49, 50 and 51 in ranges 1, 2, 3, 4, 5, 6 and 7 west of the third meridian.

District No. 6.—Townships 51, 52 and 53 in range 17 west of the fourth meridian.

DESTRUCTION OF WOLVES.

The regulations under which wolf bounties were paid during the past year were substantially the same as those of the preceding year. The Western Stock Growers' Association raised the bounties to \$15 for full grown wolves and \$5 for pups. The Willow Bunch Association decided to pay a level bounty of \$10 for all full grown wolves. The following statistical statement shows the number of wolves killed for which bounties were paid from 1899 to 1901, inclusive:

Association		Dogs	Bitches	Pups	Total
Western Stock Growers'....	1899	75	43	336	454
	1900	73	54	264	391
	1901	68	68	238	374
Willow Bunch Stock Growers'...	1899	1	.....	.....	1
	1900	2	1	.....	3
	1901	2	.....	.....	2
The Territories.....	1899	76	43	336	455
	1900	75	55	264	394
	1901	70	68	238	376

In certain portions of the country ranchers are supplementing the bounties paid by the association; in some cases as much as \$30 per head is thus paid. This, with the value of the skin, which commands from \$4 to \$5 in the market, ought to be an incentive to Indians to hunt the wolf.

Although the damage done by these pests during recent years has been very considerable indeed, they are not as numerous now as they were prior to 1874 or 1875, when regular excursions were made from Montana into the North-West Territories for the purpose of hunting wolves for their pelts alone. In those days the expediency of poisoning was invariably resorted to. Their is at present an erroneous idea abroad that the timber wolf will not touch poisoned bait. Several cases are, however, recorded where these animals have been successfully killed in this manner during the present year.

The Bounty Statute of the State of Montana was amended during the past year. Five dollars is now paid in that State for full grown coyotes and wolves and their pups, and \$7 for mountain lions. The following extract from a recent report of the Montana Board of Stock Commissioners on this subject is of considerable interest to stockmen throughout the Territories.

There is but one law with which the stock interests are closely identified upon which we desire to offer special comment or suggestions—we refer to the law providing for the payment of bounty on wolves and coyotes. Since this law was first enacted a vast number of the animals have been destroyed and claims for bounty filed against the State. It was the general opinion among stockmen, during the first three years of the operation of this law, that there was a notable decrease in the number of these animals as it seemed impossible that so many should be killed without affecting the whole number. However, from statistics gathered from the various counties it is evident that wolves at least are on the increase, and that the damage occasioned by them is as great as at any time in the past. This seems to be caused by two conditions: the bounty fund is insufficient to provide for the prompt payment of claims, and the hunter's greatest incentive—a cash bounty—is taken away, and there are few who are willing to engage in the busi-

ness; and secondly, the bounty on wolves is too small owing to the difficulty of killing them. . . . The universal idea among stockmen is that a fund should be created which shall be sufficiently large to meet all bounty claims as fast as filed, so the bounty will be worth face value in cash anywhere in the State. In order to effect this there are two remedies either of which or both will be satisfactory to the live stock interests. The first is the absolute repeal of the bounty on coyotes, or, at the very least, a reduction to a minimum amount. We advocate this idea because our stockmen are practically unanimous in the opinion that the wolf, and not the coyote, occasions the damage to live stock, and that the coyote is responsible for very little, if any, loss in this direction. Then, an examination of the claims filed against the bounty fund will show that fully seventy-five per cent. of all claims filed are for coyotes and that there is a steady increase in the percentage. Under these circumstances it seems folly to continue the expenditure of so large an amount of money for the extermination of an animal that is almost harmless to stock, and we feel that the stockmen are justified in their demand for an entire abrogation of the coyote bounty, or at least a radical reduction in the amount. . . . As a secondary measure, we should recommend an increase in the wolf bounty to at least five dollars; with a cash bounty of this amount, there would be renewed activity among hunters, and the pests would be exterminated. . . . One of the most satisfactory bounty laws in operation is that enacted by our Canadian neighbours, where the bounty on female wolves is ten dollars, on dog wolves five dollars, and on pups three dollars, with none whatsoever on coyotes. . . . An examination of the record of the three northern counties of Montana leads to the suspicion that many coyote skins are brought in from Canada for the purpose of obtaining the bounty. This suspicion seems justified by the fact that there is no bounty whatsoever on coyotes in Canada, and that the proportion of coyotes to wolves in the three counties mentioned will average from eight to twelve coyotes to one wolf, while the proportion in other counties is not to exceed two or three to one wolf. There is little doubt that we are annually expending a large amount of money in the perpetuation of a fraud from which there is little if any benefit derived by the stock interests.

III.—AGRICULTURAL EDUCATIONAL WORK.

AGRICULTURAL INSTITUTES.

That the Territories are pre-eminently an agricultural country, that all other branches of industry here must necessarily fade into insignificance before those of farming and ranching and that those conditions will be more or less permanent, are statements which scarcely require argument. It is a peculiar feature of the colonisation of this western country that every farmer coming here, be he experienced or inexperienced, has many things to learn and often more to unlearn, and also that a large proportion of our rural settlement is composed of men who were not previously engaged in agricultural pursuits and, therefore, possess little practical knowledge of farming. In view of these facts it is clear that a prime necessity exists for a comprehensive and well considered scheme of agricultural instruction. It may even be contended that to supply this necessity ought to be the chief aim and mission of a department of agriculture. As a matter of fact a very considerable portion of the work of the Department is now of an absolutely educational character, and this element also enters more and more into the administrative duties of the Department. Nature study and agriculture have been included in the curriculum of our public school system for a number of years, and a foundation is thus laid upon the basis of which the younger generation may in later years acquire a useful knowledge of the science of agriculture, and which will serve to stimulate an interest in the subject on the part of the professional man and the business man, as well as the farmer, and gradually raise the profession of agriculture in the Territories to the high place it occupies elsewhere. The impression which is apt to prevail in

most new countries where the agricultural operations are still somewhat crude, and which prevailed up to recent years in older settled countries, that "any fool can farm," is gradually giving way before improved methods and the reduction of farming to a business. In fact it would be hard to name any particular art, profession or trade which requires one half the technical knowledge, business capacity and application that are essential qualifications of the man who manages successfully an up-to-date stock or diversified farm. In spite of the urgent demand by farmers for technical instruction and scientific and practical information and, notwithstanding the fact that there are colleges and other educational institutions almost without number for the technical training of our future lawyers, doctors and clergymen, the whole of Canada can only boast of one solitary agricultural college, namely, that of Guelph.

In the absence of such institutions a substitute was provided in the shape of the agricultural institute system. The following extract from a memorandum on this subject by the Right Hon. Horace Plunkett, Vice-President of the Department of Agriculture and Technical Instruction for Ireland, is of peculiar interest:

If there is one feature of agricultural education which, having been tested to the utmost in every country of the world, has stood that test better than any other, it is the itinerant instructor. In our searches at the time of the Recess Committee this was a feature which in every country the administrator and the educationist laid stress upon as showing invariably most fruitful results; and all the experience of the Department since has confirmed us in the faith which experience both of England, Scotland, the Continent, Canada and America had implanted in our minds.

Now what are the functions, the work and the qualifications of the itinerant instructor? His principal function, in a word, is to be the guide, philosopher and friend of the existing farmers. While no doubt a good many of the younger generation, even of the boys of school-going age, will derive benefit from the teaching of the itinerant instructor, and while he will render an important service in supervising the practical course of agriculture in the schools in the country to be referred to later on, still his main concern is with the actual working farmers. For them it would be unnecessary to attempt a scheme of systematic instruction in the principles of agriculture. Comparatively few farmers wish to know by what mode of reasoning the scientific expert arrives at the conclusion that while one class of soil would be benefited by an application of lime, a second should have a dressing of basic slag, and a third a mixture of basic slag and kainit. Similarly with regard to every branch of agriculture, be it crop raising or milk production, the average farmer wants to know the most profitable practice to follow under a given set of conditions. Tell him this and he will readily dispense with the scientific reasons on which the advice is based. But for all that much can be done even in this process to increase the number of thinkers among the farming classes. Exactly what effect we may produce time and the working out of the entire scheme alone can show. But we should aim at making every farmer an observer, an experimenter, and so a possible contributor to the progress of agricultural science. Of course, we all know that the chief means to this end is by supplying the youth of the country with such a training as will give them the power of working out agricultural problems on a scientific basis. But by bringing home to the existing farmers what is the practical outcome of that which has already been accomplished by the application of science to agriculture a good beginning can be made. Some people believe that this can be accomplished by means of the agricultural press and by leaflets. We hold strongly that printed information cannot possibly be made as efficient as the living agent.

The chief difficulty the Department has had to contend against since agricultural institute work has been taken up in the Territories is the absence of local organisation at points where there are no agricultural societies. There are now some agricultural societies, in active operation throughout the country, which are fairly well distributed. It is, however, found that in order to cover the whole of the Territories in a satisfactory manner now at least seventy-five to a hundred meetings must be

organised, and these meetings are not always held at agricultural societies' headquarters. As a rule the larger towns are not good points for institute work, much larger and more representative attendances being secured at country school houses. While all advertising and arrangements with speakers are completed in this Department, it is evident that there are certain local arrangements in connection with these meetings which must be attended to by someone on the spot and, also, that where there are not one or more persons who make it their business to stir up an interest in the matter the attendance is seldom satisfactory.

The principle of having the agricultural societies take charge of institute work is one that is strongly upheld in every province in Canada. It is realised both in the provinces of Manitoba and Ontario that a mistake has been made in starting the "Farmers' Institute" organisation on an independent basis, thus having a duplicate system of agricultural organisation throughout the country, viz., the "Farmers' Institute" and "Agricultural Societies," involving twice the amount of administration, and each exercising a weakening influence upon the other. It is contended that the farmer and the stockman would be better served by a smaller number of stronger and more influential organisations. While it must, therefore, be admitted that the system adopted in the Territories, namely, the one set of societies through which the Department reaches and co-operates with the farmer, is along the lines towards which the Provinces aim, it must also be admitted that the system is at fault so far as the organisation of outside meetings is concerned. The difficulty could probably be overcome by allotting a specific area to each agricultural society and to leave it in the hands of the society to determine at what points therein institute meetings could advantageously be held, and to appoint at least one practical resident director to take charge of institute work at each point selected. The Department would then be in a position to communicate direct with these "institute directors" respecting such details as local advertising, the use and heating of halls, etc., which it is absolutely necessary to have a local man become responsible for.

The whole tendency in institute work at the present time is to *demonstrate* rather than to *describe*. Charts and live animals are now extensively used in lecturing. I had occasion some time ago to attend a Live Stock Breeders' Convention, held under the auspices of the Manitoba associations at Winnipeg, where live horses, cattle and sheep of different breeds were brought into the lecture room and placed at the disposal of speakers. Needless to say, the proceedings were very interesting indeed. It is of interest to note that "live stock judging" is now being introduced into the institute work of the Province of Manitoba. Three meetings dealing with this subject were held some time ago by Dr. Hopkins, V.S., a member of the Territorial institute lecturing staff, under the auspices of the Bradwardine Farmers' Institute of Manitoba. At two of the meetings live stock were used. Owing to the preponderating importance of the live stock industry in the westerly portion of the Territories lectures along those lines would doubtless be much more useful and more appreciated than the average institute address.

During the year arrangements were made with the Dominion Department of Agriculture, through Mr. F. W. Hodson, Dominion Live Stock Commissioner, for the use of institute lecturers from eastern Canada. It is, of course, evident that these men are at considerable disadvantage in addressing western audiences, in view of the fact that the conditions,

climate and soils, and consequently agricultural methods, differ so very materially in the east and the west. At the same time there are certain guiding principles in connection with agriculture and live stock which apply all over the world and which these men are instructed to deal with exclusively in addressing western audiences. A distinct advantage in connection with institute speakers coming from a considerable distance, and who are men of more or less reputation, is the fact that they draw larger audiences than those who are residents of the district. If, however, the institute system is ever to become as successful and important as it deserves to be no time should be lost in organising a large institute staff recruited entirely from local sources. There are undoubtedly men throughout the Territories who have made a success of some particular line or branch of farming and who are capable of imparting the experience they have gained, and the conclusions they have reached, to their fellow farmers in concise and convincing language. With very little practice these men ought to make the most successful institute workers. They have experience in western ways and understand western feeding materials and agricultural practices. A glance through the statement herewith attached, showing the institute meetings held during the year, will reveal the fact that the great majority of lecturers were Manitoba men or hailed from the Province of Ontario.

LIST of Farmers' Institute Meetings held in The Territories During
the Year 1901.

PLACE	DATE	SPEAKERS
Olds.....	Feb. 25	C. Marker, D. Drummond & T. G. Raynor.
Innisfail.....	" 26	
Red Deer.....	" 27	
Tindastoll.....	" 28	
Didsbury.....	Mch. 2	
Leduc.....	" 4	
Wetaskiwin.....	" 5	
Ponoka.....	" 6	
Lacombe.....	" 7	
Calgary.....	" 8	
Lethbridge.....	Feb. 25	J. H. Grisdale, Geo. Lang & T. N. Willing.
Magrath.....	" 26	
Cardston.....	" 27	
Mountain View.....	" 28	
Fishburn.....	Mch. 1	
Pincher Creek.....	" 2	Geo. Lang, T. N. Willing & Mr. Elliott.
Ebenezer.....	" 8	
Yorkton.....	" 9	
Crescent Lake.....	" 11	
Saltcoats.....	" 12	
Clumber.....	" 13	
Riversdale.....	" 14	
Thingvalla.....	" 15	
Rothbury.....	" 16	
Sumner.....	" 18	
Esterhaz.....	" 19	J. W. Mitchell, D. Drummond & T. G. Raynor.
Ohlen.....	" 19	
Whitewood.....	" 20	
Moose Jaw.....	" 9	
Marlborough.....	" 11	
Lumsden.....	" 12	
Wascana.....	" 12	
Balgonie.....	" 13	
Davin.....	" 14	
Wolseley.....	" 21	

LIST of Farmers' Institute Meetings held in The Territories During
the Year 1901.—*Continued.*

PLACE	DATE	SPEAKERS
Ellisboro	" 22	J. W. Mitchell, D. Drummond & T. G. Raynor.
Grenfell	" 23	
Broadview	" 25	
Fitzmaurice	" 25	
Fairmede	" 26	
Wapella	" 27	
Hillburn	" 28	
Forest Farm	" 29	
Weyburn	" 8	
Gainsborough	" 9	
Elmore	" 11	Angus MacKay, Geo. Harcourt.
Carnduff	" 12	
Alameda	" 13	
Oxbow	" 14	
Carlyle	" 15	
Cannington Manor	" 16	
Glen Adelaide	" 18	
Fleming	" 19	
Moosomin	" 20	
Qu'Appelle Station	" 15	J. W. Mitchell, D. Drummond & T. G. Raynor.
Fort Qu'Appelle	" 16	
Abernethy	" 18	
Indian Head	" 19	
Sintaluta	" 20	
Olds	July 15	Prof. Fletcher, Angus MacKay.
Innisfail	" 16	
Red Deer	" 17	
Strathcona	" 19	
Clover Bar	" 20	
Ft. Saskatchewan	" 20	
Leduc	" 22	
Wetaskiwin	" 23	
Ponoka	" 24	
Lacombe	" 25	
Prince Albert	Dec. 10	Chas. W. Peterson, Andrew Graham.
Saskatoon	" 11	
Osler	" 12	
Rosthern	" 13	
Macleod	" 9	G. H. V. Bulyea, George Lang.
Medicine Hat	" 11	
Maple Creek	" 12	

AGRICULTURAL SOCIETIES.

The Department has devoted considerable attention since its organization to the development along useful lines of our agricultural societies system. The agricultural society, as it should be, is an excellent institution, quite necessary in any progressive country and particularly necessary in a country still labouring under pioneer conditions which will probably prevail for many years to come. The agricultural society as it has been and, in a great many cases, still is in the Territories can only be looked upon as a particularly unresponsive channel through which to expend public funds. A very large sum of money has been spent annually by the Dominion Government through this Department, in addition to the amount annually appropriated by the Legislative Assembly, in aid of such societies and the opinion generally prevails, amongst those who are best acquainted with the results accomplished, that this money

has been more or less wasted. Prior to the organisation of this Department the administration devoted to these societies necessarily only amounted to the annual distribution of the grant upon receipt of certain returns showing specific services performed.

The conditions upon which financial assistance was extended were, first, the holding of an exhibition; secondly, a membership exceeding fifty. The ordinance under which the societies were organised set forth in full the various objects of such societies. The practical experience, however, was that all these societies devoted their entire attention to the holding of exhibitions, neglecting altogether the other and more important objects for which they were formed. Since the Department has been in a position to exercise more influence and control over the operations of these societies, and to give more attention to their development, the aim has been to discourage the holding of inferior shows and to take a more active interest in institute work and other objects of greater value to agriculture.

When the holding of agricultural exhibitions was first included amongst the objects of agricultural societies, and was by this means made the aim of direct state aid, doubtless the opinion prevailed that these exhibitions exercised, or ought to exercise, an important educational influence. As far as can be learned the system is more or less the same all over the world and state aid is freely given towards such exhibitions. In principle no fault can be found with holding exhibitions; it cannot be denied that the gathering together in competition of the best stock in any district and placing it on view for the benefit of the public, and having it judged by experts, must of necessity be an education to the observant farmer or stockman. In this respect, however, our agricultural societies failed. That an agricultural fair can be successfully made a vehicle of education cannot for a moment be denied, but that function has not been encouraged in the Territories even by our large shows. The experience has been that a great number of our so called "agricultural exhibitions" simply developed into race meetings and finally resolved themselves into a general holiday for the district, which is the function they are now expected to fill by a certain class of people too numerous represented on the board of directors of many influential societies. This state of affairs is by no means confined to the Territories but has been the experience of every province in Canada, in every colony of the empire and in Great Britain itself, the cradle of all that is perfect in agriculture and live stock. Even so conservative a paper as the "Mark Lane Express" makes the admission, in a recent issue, that during the past twenty years the tendency of events has been altogether of a nature to dampen the enthusiasm which used to greet the Royal Show, by proving that the influence for good worked by the show system was strictly limited and that it may be truly declared that nearly all British agricultural societies need reconstruction and remodelling, calculated to make them much more serviceable to the needs of the farming community. The argument in some instances has developed into a question of whether the small show should be abolished altogether and all energies centred towards making a success of large central shows. This view has found many advocates, but the opinion is freely expressed that while chances are that the larger show will be the better one from an educational standpoint it is not, owing to the expense of travelling, patronised by the farmer, and if there is any virtue in the educational feature of agricultural exhibitions, state aid should rather be devoted to those which at-

tract the farmers with the object of improving and developing them. This has been the policy pursued by the Department since its organisation.

One of the principal features of an agricultural society should be to represent the agricultural interests of its own particular district. It is keenly recognised that without organisation for economic purposes amongst the agricultural classes state aid to agriculture must be mainly ineffectual and even mischievous. Bearing this fact in view, the Department has devoted considerable efforts to promoting agricultural organisation and to impressing these societies with the fact that important work lies before them as a medium of co-operation and as the mouthpiece of the agricultural interests of their districts, and that the influence they ought to wield in the affairs of the country should be far reaching. I have thought it well to quote the following from a Departmental circular directed to agricultural societies during the year :

It is noticed that some societies have in the past omitted to furnish the Department with a copy of the report made by the retiring board of directors and information as to any discussion thereon. The opinion seems to prevail that a society has done its duty by holding an exhibition of more or less merit. Very far from such being the case, in the opinion of the Commissioner, the holding of such exhibition is one of the least important duties and objects of agricultural societies. It is a fact acknowledged by the directors of not a few of our societies that their efforts in this branch of their work have not received the support, nor attained the success, they anticipated and the question naturally arises whether, in localities where, on account of the apathy of the people, the lack of sufficient competition in the various classes, or from other causes, creditable exhibitions cannot be held, the energies of the societies should not be directed into other and better channels. When provision was made for the organisation of agricultural societies it was not by any means the intention that they should confine their efforts to the holding of fairs. It was rather hoped that they would gather around them all the progressive and representative farmers and stockmen in the community and that they would meet frequently and deliberate upon matters affecting the welfare of the agricultural and pastoral industries of the district, and discuss improved methods in agriculture and live stock husbandry. I am directed by the Commissioner to urge upon you, as strongly as I am able, the necessity for not losing sight of the many other useful objects of agricultural societies in the attempt to hold annual shows, and also to state that he will be glad at any time to receive resolutions and reports upon any matter of interest and importance upon which the Department could advantageously take action, and, while the Commissioner cannot promise you that he will in every case act upon any suggestions or recommendations made, he will at least pledge himself to give the representations of your society the most earnest consideration.

It will be easily realised that it would be an impossible task for the Department to work efficiently through isolated individuals in its endeavour to promote the diffusion of agricultural information and the improvement of live stock. The attempt to do so would necessitate a huge staff and a lavish expenditure of public money and the results would, in nine cases out of ten, be discouraging, demoralising to the people and ruinous to that spirit of self help which characterises all progressive communities. The experience has been that where societies were officered by aggressive men, who took upon themselves to deal in a practical way with the agricultural problems confronting the district, working out their agricultural and industrial advancement and discovering the powers which combination gives the remote and most insignificant community, there is inevitably a healthy tendency towards combined efforts for other purposes. Opportunities and means for educational and social improvements are thus multiplied where such means and opportunities did not exist before and, as a consequence, life on the average prairie farm or ranche is made considerably more profitable and attractive.

It is satisfactory to note that the work of the Department in the

direction of improving existing agricultural societies has in many instances been fruitful. It may be mentioned that the Indian Head Agricultural Society have during the year offered a considerable number of prizes for essays on agricultural subjects. An attempt has also been made in some cases to import improved stock for the benefit of the members of outlying societies and the various efforts of the Department, having in view the improvement of agricultural conditions, have generally met with the hearty co-operation and active assistance of the majority of agricultural societies. The Canadian North-West Irrigation Company has signified its intention to donate at the Lethbridge & District Agricultural Society fall meeting the following prizes :

First, for the best cultivated farm under irrigation, to be competed for by farmers within the Lethbridge Division—\$25.

Second, for the best cultivated farm under irrigation, to be competed for by farmers within the Magrath Division—\$25.

Third, for the best cultivated farm under irrigation, to be competed for by farmers within the Stirling Division—\$25.

Fourth, for the best cultivated farm under irrigation, to be competed for by all farmers within the above three Divisions—\$15.

I have already, under the heading of experimental work, referred to a scheme which has now received your approval for the working out of a plan of co-operative experiments through the medium of agricultural societies.

Very considerable trouble has arisen in past years in connection with the checking and compiling of agricultural societies' returns. During the year forms were printed and furnished to all societies which filled a distinct want. Some little difficulty arose in connection with these forms, particularly in cases of new secretaries, but once the forms were received, properly filled up, the work of checking and compiling devolving upon the Department was considerably simplified. It was found necessary during the year to address an appeal to Territorial agricultural societies to adopt business methods in their dealings with the Department. The following is an extract from the circular in question which, I believe, had the desired effect :

Returns of agricultural societies should cover the year ending upon the date of the annual meeting and the Ordinance provides that such returns must be sent to the Department within ten days after such meeting. It is the intention to insist rigidly upon this being done in the future and no society will, therefore, receive a grant out of any appropriation that may be made during the coming year unless it complies with this provision.

The Department has ample justification to complain of the unbusiness like manner in which a large number of agricultural societies conduct their affairs. Circular letters are issued to societies by the Department from time to time, containing information respecting amendments to The Agricultural Societies Ordinance and important changes in regulations, etc. No system of filing this correspondence seems to have been adopted by many societies, and the result is that when a new secretary is appointed he has no means of acquainting himself with the work of his predecessor, which necessitates again entering into correspondence with the Department and thus duplicating work that has been done once before and leaving the door open to complications and misunderstandings on the part of new officials of such societies. Provision is made in the Ordinance for the inspection by the Department of the books and records of agricultural societies. I am, therefore, to urge upon your directors the absolute necessity of procuring one or more Shannon files, which can be purchased with perforator attached in any book store for one dollar a piece, and have all official communications arranged alphabetically thereon so that the society's records may, in the event of the resignation or absence of the secretary, be banded over to his successor together with all books and accounts belonging to it.

It might also be well to state here that all letters sent to you by the Department in your official capacity as secretary are invariably to be submitted at the first meeting of your Board of Directors for their information and such action as they may deem advisable.

AGRICULTURAL Societies for 1901.

N A M E.	Members			EXHIBITION STATEMENT.				FINANCIAL STATEMENT.									
	Number	No. of meetings	Institute	Date of exhibi- tion	Paid in prizes for sports, etc.	Paid in prizes	No. of entries	(In hand from 1900	Federal Grant	Territorial Grant	Miscel- laneous receipts	Total receipts	Total expendi- ture	Balance on hand	Assets	Liabilities	
Alameda	106	2	205	Oct. 2	\$	\$ 325.50	355	\$ 240.82	\$	\$ 99.00	\$ 150.00	\$ 249.00	\$ 413.75	\$ 76.07	\$ 91.07		
Battle River	61	2	34	Sept. 24		134.60	133	97.98	111.67	65.00	101.00	166.00	199.68	64.30	529.30	14.00	
Central Sask.	54	2	17	Sept. 17			104	106.21		55.00	29.00	195.67	63.91	97.44	1,768.40	35.50	
Carrot River	50	4	178	Sept. 27		110.25	194	260.92			89.50	89.50	220.70	163.95	853.95	24.99	
Ft. Saskatchewan	58	2	42	Oct. 22-23	226.00		270		286.00	110.00	160.80	336.88	552.06	4.80	88.12		
Ft. Qu'Appelle	107	2	142	Oct. 4		389.00	643		238.22	123.00	312.50	693.72	546.48	203.97	753.97	106.67	
Farmedale	136	2	65	Oct. 4				56.73		95.00	136.00	231.00	227.32	8.15	560.93	113.62	
Grenfell	66	2	65	Oct. 5			308	160.02		84.00	161.00	419.00	304.40	98.95	148.95	430.00	
Gainsborough	161	2	245			169.00		126.45		150.00	269.00	419.00	446.50	98.95	148.95	430.00	
Indian Head	246	4	245					472.68	354.14	83.00	147.88	230.88	456.02	247.54	1,057.54	923.17	
Innisfail	96	2	80	Sept. 26		291.05	437	301.59		111.00	1,691.93	2,130.00	2,402.58	29.10	2,570.68	1,034.00	
Lorne	106	2	92	Aug. 6	233.00		395	47.68		54.00	99.50	153.50	185.35	41.06	3,106.06	525.00	
L. Cut Arm, Qu'App.	54	2	111	Sept. 24		131.25	175	10.65	297.49	107.00	567.85	972.34	972.34	7.95	1,732.95	1,084.00	
Leithbridge and Dis.	120	5	256	Sept. 4-5		352.00	599	40.65	305.15	103.00	383.42	881.57	916.89	3.49	1,139.49	325.00	
Lacombe	66	3	107	Oct. 18, Aug. 9		346.98	309	43.27	305.15	130.00	2,065.50	2,915.50	2,221.55	55.15	903.47		
Maple Creek	154	2	60	July 17-18	107.00		108	9.54	215.20	150.00	405.90	962.97	803.95	483.47	483.47		
Moose Min.	183	3	50	Sept. 23-24	49.00		235	44.50	915.20	130.00	394.55	1,092.07	803.95	483.47	483.47		
Moose Jaw	139	2	80	Sept. 28		676.00	665	384.45	300.16	130.00	634.55	1,144.71	1,240.20	35.98	500.90	265.11	
Medicine Hat	139	2	370	Sept. 18-19	141.00		639	26.82	244.60	51.00	139.00	230.00	430.84	25.45	220.98	85.00	
Moose Jaw	57	4	375	Oct. 2		179.50	624	26.18		124.00	277.25	645.85	646.58	35.98	1,025.45	40.00	
Moosomin	146	4	60	Aug. 7		424.75		274.87		85.00	26.00	72.00	144.00	208.46	708.46	207.25	
N. E. Assiniboia	54	4	125	Oct. 2		57.00	64	128.46		85.00	139.00	224.00	630.45	5.37	686.64	207.25	
Olds	108	2	125	Oct. 2		382.25	342	19.82		150.00	466.00	616.00	545.65	224.99	2,239.99	3.95	
Pheasant Forks	98	2	97	Sept. 27		440.65	309	233.44		50.00	427.20	477.20	545.65	224.99	2,239.99	3.95	
Pineber Creek	118	2	103	May 9		274.30	294	646.26		63.00	592.00	655.00	792.44	508.82	508.82	1,078.14	
Red Deer	219	2	55			987.60	958	25.78	361.88	91.00	253.08	344.08	444.14	6.91	6.91		
Regina	72	2	400	Aug. 13-14		222.25	215	33.25	106.93	51.00	317.00	712.90	106.85	44.30	44.30	30.25	
Rosher and Hague	45	2	75	Oct. 3		94.50	128	33.25	245.99	150.00	59.00	112.00	106.85	44.30	44.30	30.25	
Rothbury and Logburg	154	2	245	Sept. 27		561.25	647	39.15	39.15	126.00	308.00	724.21	778.04	187.07	100.85	11.00	
Stirling	59	1	18	Oct. 1		485.25	410	240.90	290.21	126.00	308.00	724.21	778.04	187.07	100.85	11.00	
South Sask.	53	2	230	July 16		301.25	420	290.06		150.00	621.95	771.95	1,062.01	22.63	1,548.03	324.25	
Sheep Ck., Davisburg	133	2	230	Oct. 4				34.44	605.63	142.00	220.30	967.37	979.74	22.63	1,548.03	324.25	
S. E. Assiniboia	125	2	79	July 30		248.75	233	385.77		65.00	300.00	365.00	512.75	381.77	381.77		
S. Qu'Appelle	146	3	81	July 8-9		175.25	137			97.00	224.00	280.00	282.00	238.02	238.02		
S. Edmonton	74	2	200	July 8-9						97.00	224.00	280.00	282.00	238.02	238.02		
Wapella	155	2	150	July 10-11		750.50	605			97.00	472.39	823.39	4,469.71	353.68	7,918.54	1,154.20	
Wetaskiwin	99	2	85	Sept. 19		839.75	813	345.49	370.60	67.00	1,396.35	2,590.80	1,033.45	25.99	1,041.00	128.00	
Yorkton	155	2	104	Aug. 7-8		1,026.00	861	38.06	1,000.00	67.00	1,396.35	2,590.80	2,802.62	25.99	1,041.00	128.00	
*Broadview Whitewood		3		July 1 to 4		1,161.25	255	15.33			10,389.24	10,389.24	10,101.18	303.59	24,293.30	19,562.31	
*Edmonton In. Ex. Assn.				Aug. 15-16		321.30	541		404.03		825.10	1,285.10	1,377.65	24.24	24.24	211.45	
*Grenfell, Wolsley				July 10 to 13		2,336.37	703	2,786.02	1,000.00		6,218.24	7,218.24	8,475.45	1,528.81	1,638.81	603.50	
*In. Western, P. Ex. Co.																	
1901	4,588	108	5,071		7,954.42	15,766.32	14,327	893.77	7,205.87	2,989.00	39,217.61	50,432.48	54,274.45	6,027.34			
1900	4,216	47	799			14,538.38	9,836	3,801.72	13,122.70	7,238.33	19,624.20	39,985.92	36,694.02	7,917.35			

*Societies amalgamated for show purposes and incorporated exhibition companies. †See Grenfell and Wolsley. ‡See Central Assiniboia.

Official Live Stock Judges.

It is taken for granted that the agricultural fairs system occupies an important place in the Departmental scheme of agricultural education, and also that the educational value of such fairs can only be measured by the degree of efficiency of those men who are called upon to place the awards or, in other words, to establish the standards towards which all observant breeders should aim, or at least those who expect to derive any benefit from the agricultural fairs system. Viewing a local fair from this standpoint, the first essential towards making it a success is clearly the largest possible turn out of high class stock, and the second, undoubtedly, the proper judging of the exhibits. Judging at many agricultural fairs, prior to the reorganisation of the Department, was conducted in such a manner as to thoroughly defeat the sole object of these exhibitions. Most often local judges were requested to act and frequently failed to turn up and were then replaced by men sometimes quite incapable of discharging such functions, but who happened to be within easy reach. Complaints from exhibitors were unceasing and loud. Even in cases where the judges were considered absolutely capable of doing their duty intelligently, a suspicion would invariably lurk in the mind of some exhibitor that they were influenced in their decisions by friendship or business relations with his competitors. In some cases the "go-as-you-please" system of live stock judging had even been carried to the point where the selection of judges was left altogether until the day of the show in the hope of some likely person being on the ground then. It can be easily understood that such a practice could result in nothing better than a farce.

Immediately upon the formation of the Department, when the public became aware of the fact that these agricultural societies were placed under some sort of control, numerous complaints were lodged of unfair and incompetent judging and it became evident that a very important work could be done by the Department in dealing with this question in a practical way. The scheme of supplying government appointed judges at local agricultural fairs is by no means an original one. The practice has been quite extensively adopted in one or two of the Australian colonies, notably New South Wales. The Territories, however, have the honour of having introduced the scheme into Canada, and it might here be mentioned that, owing to its success in this country, the scheme has recently been adopted by the Province of Ontario and is also to be given a trial in the Province of Manitoba and the Maritime Provinces. Although there is nothing on record in the Department I am given to understand that the Grenfell Agricultural Society interested itself in a similar proposal a number of years ago with the result that the Dominion Department of Agriculture sent out a man from Eastern Canada who judged at several fairs along the main line in Eastern Assiniboia.

The decision having been arrived at to deal with the question actively, the Department immediately placed itself in communication with local and Manitoba expert live stock men and arrangements were made to organise a staff of live stock judges. The first difficulty that confronted the Department was the fact that societies had been in the habit of holding the fairs absolutely without any regard to the dates of neighbouring shows, and although every society expressed unconditional approval of the scheme the Government had in view and a desire to co-operate, the first year it was to be tried in practice, namely, 1899, the

season was too far advanced to make many changes in the dates that had previously been fixed and only six societies were, therefore, supplied. The scheme worked out so successfully that nearly every society that intended to hold an exhibition the following year applied to be furnished with official judges with the result that in 1900 the Department took charge of the judging at twenty-six shows. During the past year the machinery was further improved and the Department practically took charge of the judging in the live stock classes of every one of the thirty-three fairs held.

The Department is at times confronted with considerable difficulty in securing a sufficient number of expert live stock judges. The qualities which are absolutely essential in a successful judge are by no means frequently found united in one man. It is, above everything, necessary that he should be an experienced man with live stock and possess an eye for good form. It is almost equally important that he should have a reputation in this respect outside of his own immediate locality. His personal character must also be absolutely above reproach, and he should be disinterested to this extent, that he has not bred or sold or handled any of the animals, their ancestors or their progeny, that he will be called upon to judge; and it would be very much better if he has had no business dealings at all with farmers in the locality he is to judge in. It is also of paramount importance that he be a man of considerable tact. The Dominion Live Stock Commissioner, Mr. F. W. Hodson, notified the Department during the year that he would be prepared to supply judges for the forthcoming season. This will somewhat relieve the difficulty hitherto experienced in obtaining suitable men.

The practice of stating publicly the reason for making awards has been adopted by judges in the Province of Ontario recently. There can be no question that an address by the judge, calling attention to the good points and bad points of each animal placed before him, would have a very considerable educational value. On the other hand, the exhibitors might with some propriety object, on the grounds that very often the difference between the first and second prize animals would be, comparatively speaking, insignificant, and if a judge pointed out publicly the particular defect which compelled him to place any animal second the public might attach a great deal too much importance to that defect, and this in turn might injure the market value of such an animal or its patronage for breeding purposes. This objection is a serious one, but it is a question whether the educational effect aimed at should be defeated in deference to the self interest of exhibitors.

Instructions might well be issued to judges not to award prizes to inferior animals and not to allot any first prize unless the exhibit in question was worthy of that honour. It might also be seriously considered whether a scheme could not be worked out for judging all classes of live stock represented in the west by points and supplying special score cards to the judges. Most of the great breed societies have now practically agreed upon "scales of points." The system might at least be tried where such scales are available. I may say that this system of judging has been extensively practised in New South Wales. The authorities there have worked out a scale of points for each class of live stock, that is, light and heavy horses, beef and dairy cattle, wool and mutton sheep. This, of course, is a very rough classification and would scarcely be applicable for the purposes of judging at some of our larger shows, where, however, the scale of points of each breed society could be adopted.

IV.—COLONISATION.

PAN AMERICAN EXHIBITION.

Early in the year the Territorial Government received an intimation from the Minister of the Interior to the effect that the Immigration Branch of his Department was anxious that Territorial products should be represented at the Pan American Exhibition at Buffalo, which was to open on the first day of May. The object of such an exhibit might be first, to advertise the Territories as a desirable field for settlement; secondly, to find a new and better market for our surplus products. After giving the matter due consideration you came to the conclusion that the character of our exhibit should be rather of an immigration than a commercial nature. This naturally involved confining the exhibit to agricultural products and commercial live stock.

Considerable time was consumed in conducting the necessary negotiations with the Dominion Government which, however, ultimately resulted in a grant of \$5,000 being set apart with this object in view. By that time it was found absolutely impossible to gather an exhibit of sheaf grains, grasses and other wild and cultivated forage plants and have it installed before the exhibition opened and it was, therefore, decided to concentrate all efforts on making a creditable display of commercial live stock.

Arrangements were accordingly made with Messrs. Gordon, Ironside & Fares, of Winnipeg, to select two carloads of prime grass finished export steers. Unfortunately the spring had been exceedingly cold and wet, and range cattle had put on flesh slowly. Considerable difficulty was, therefore, experienced in selecting a thoroughly creditable lot of steers. The cattle were shipped early in September and reached Buffalo about the middle of that month, after a somewhat prolonged railway journey.

Arrangements were also made with the Canadian Land & Rancho Company to select two hundred two-year-old wethers and have them fed, the intention being to cull them down to a small carload of 75 head. Disease, however, broke out amongst the flocks of that company during the summer and the Department had to procure the sheep required from the Sarnia Rancho Company, of Medicine Hat. The sheep were shipped so as to reach Buffalo during the last week of September, and proved to be excellent quality and a very even lot. They were selected and prepared for exhibition by Mr. John A. Turner, of Calgary, one of the most experienced sheepmen of the west.

You visited Buffalo in person early in the summer in order to make arrangements for the reception and proper accommodation of the live stock. Some complications arose in this respect, as there were no regular classes provided for commercial stock. Arrangements were, however, made to reserve a portion of a vacant space immediately behind the Canadian Building for a corral enclosed with woven wire, in which the stock were duly installed and which proved fairly comfortable. A number of striking signs, setting forth the nature of the exhibit, were erected around the corral and the live stock attracted very considerable attention amongst stockmen and others who visited the exhibition during the months of September and October.

The exhibit having been placed in my charge, I proceeded to Ottawa,

early in September for the purpose of securing from the Department of the Interior assistants experienced in this class of immigration work, and to Montreal to arrange for transportation. Mr. White, Inspector of Immigration Agencies at Ottawa, very courteously met the request of the Department and Mr. W. V. Bennett, of Omaha, Neb., was placed at our disposal while the Territorial exhibit remained at Buffalo. In addition to Mr. Bennett the services of Mr. J. F. Betts, of Prince Albert, and Mr. Peter Talbot, of Lacombe, were secured. The latter came up in charge of the cattle and remained in that capacity until the exhibit was disposed of.

The staff was kept very busy each day answering enquiries, distributing handbooks and obtaining the names and addresses of people who expressed a desire to receive further information about this country. While it is absolutely impossible to form an approximate estimate it is safe to state that certainly no less than 30,000 to 50,000 people visited the exhibit.

I cannot leave this subject without expressing my deep obligations for courtesies received at the hands of Messrs. Frank Converse, Live Stock Superintendent of the Pan American Exhibition; F. W. Hodson, Dominion Live Stock Commissioner; and E. B. Elderkin, representative of the Dominion Department of Agriculture at Buffalo. I also desire to acknowledge the valuable services of Messrs. J. F. Betts and Peter Talbot, to whose untiring efforts much of the success of the exhibit was due.

THE OFFICIAL HANDBOOK.

It was quite evident that the value of an exhibit at Buffalo would be largely lost unless the Department was in a position to distribute suitable immigration literature in connection therewith. As a matter of fact the chief value of the exhibit there was the facilities thus furnished for placing immigration literature in the hands of prospective settlers. Such being the case it was decided to expend a portion of the grant received from the Dominion Government for the purpose of compiling and publishing an Official Handbook of the North-West Territories. Unfortunately there was very little time available for preparing the manuscript, but the many flattering press notices and letters which were received in the Department after its publication would seem to indicate that the handbook in question seemed to cover the case fairly satisfactorily.

The volume was divided into two parts: Part I embracing the following subjects—1, Introductory; 2, Boundaries, system of Land Survey, etc.; 3, Climate (with statistical tables); 4, System of government and taxation; 5, Educational Facilities; 6, General Description of the various sections of the Canadian North-West Territories as follows: (1) Assiniboia, (a) Eastern Assiniboia, (b) Western Assiniboia, (c) Chief towns, (2) Saskatchewan, (a) Chief towns, (3) Alberta, (a) Northern Alberta, (b) Southern Alberta, (c) Chief towns; 7, What delegates from the United States and others say about the Canadian North-West. Part II—8, Agriculture (with statistical tables); (9), Irrigation; (10), Live Stock (a) Cattle, (b) Horses, (c) Sheep, (d) Hogs and Poultry; 11, Dairying (with statistical tables); 12, Markets and Transportation; 13, Mineral Resources; 14, Shooting and Fishing; 15, Homestead Regulations; 16, Railway Land Regulations.

The handbook was written and compiled especially with a view to distribution in the United States, but a large number of copies have been sent to England, Scotland and Ireland and the demand for this publication has been so great that only a very small supply is now available. I would strongly recommend that when the present edition is exhausted provision should be made for a new and revised edition.

EMIGRATION FROM EASTERN CANADA.

As a large edition of the official handbook had been provided, and great care had been exercised in its distribution, the Department found itself with a large number on hand after the Pan American exhibit had been withdrawn, and it was considered advisable to distribute a portion of the remaining handbooks in Eastern Canada. A short resumé was, therefore, prepared of the contents of the handbook, which was sent with a copy of the volume to a number of eastern newspapers, accompanied by the following appeal:

I send you by concurrent post a copy of the new handbook of the Territories, which has recently been issued by this Department. The people of Ontario are taking a great interest in this western country and it was with a view of placing before them, in an attractive form, reliable information based upon official reports that the handbook was prepared. No doubt there are many readers of your excellent journal who would be glad to obtain this information. This Department would like to enlist your sympathy and help in our efforts to build up the west, and it would materially assist if you could spare the time to personally review the book; failing this, the enclosed review is submitted for your approval.

The favour of a marked copy of the paper containing any notice you feel you can publish, would be acceptable.

The handbook was extensively reviewed and as a result considerably over a thousand enquiries were received from farmers and others in the east, who had decided to change their place of abode and were looking for a satisfactory place to settle.

The response to this crude attempt at immigration work was most astonishing and served as an indication of the unlimited field for immigration work which exists in Eastern Canada. It is a matter of statistics that a large number of people leave Ontario, Quebec and the Maritime Provinces annually for the United States, and the bulk of these are precisely the class of settlers that the Territories at present stands most in need of. A perusal of letters of enquiries from eastern farmers on file in this Department reveals an appalling ignorance of conditions in Western Canada, and it seems to be nothing less than an absolute duty to Canada to do everything possible to divert these people to the west. To deal systematically and successfully with this problem the Department should have on hand continually a supply of a reliable handbook dealing with the conditions and resources of the Territories generally. The Department has already succeeded in arranging with the various boards of trade throughout the country to supply concise information respecting their district, in the shape of folders or small pamphlets, for distribution to those who, after reading the official handbook, desire further information about any particular locality. It would not be necessary that paid agents should be maintained in Eastern Canada at present. The efforts of the Department might rather be concentrated on

directing the attention of the public in Eastern Canada towards this country by means of judicious newspaper advertising. An arrangement might be entered into with leading journals and agricultural periodicals there to open their columns to a series of short newspaper paragraphs respecting western development and conditions, such, for instance, as the occurrence of extraordinarily heavy yields on particular farms, of which the Department keeps a careful record, and a certain amount of regular advertising could also advantageously be resorted to. Eastern Canada is a field which is very incompletely worked at the present time; the only province in Canada which is conducting any successful immigration work there is the Province of Manitoba. There can be no doubt whatever that a well directed immigration campaign would bring to the Territories a large surplus of the population of Eastern Canada that is now seeking new homes in the United States.

IMMIGRATION.

I attach herewith the usual tables showing the volume of the population which has gone into the Territories during the past year, also the number of homestead entries made at the various Dominion lands offices, grants of lands and sales by railway and land corporations and by the Dominion Government. The most notable feature of the movement of population into the Territories during the past year is the Mormon influx into the irrigated lands of Southern Alberta. Mr. Jesse Knight, a Mormon millionaire, has been largely instrumental in directing the attention of his coreligionists to the Lethbridge district by means of the large expenditure which he has made on various enterprises in Southern Alberta.

While the influx of people for the past year showed a satisfactory increase over that of the previous year the immigration into the Territories for the coming year promises to eclipse all past performances. The most interesting and promising feature of the present immigration development is the presence within our boundaries of a number of the large experienced colonisation companies which, in view of the dense settlement of the Western States, have transferred their energies to the vacant lands of the Canadian North-West. It is, of course, as yet problematical what the results of their efforts will be. Judging, however, by the success these enterprises have met with in connection with the settlement of the North-Western States of the Union, there would appear to be every reason to believe that they will show the same results on this side of the international boundary line.

IMMIGRATION Statistics.

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1898	133	166	1,042	1,702	1,129	1,124	809	308	349	228	300	173	7,463
1899	2,624	2,506	1,348	2,729	2,520	633	523	357	450	514	375	196	14,775
1900	151	240	2,415	4,115	2,205	2,307	1,297	995	645	795	422	163	15,750
1901	171	427	2,669	2,915	2,316	2,370	994	2,402	1,101	1,151	1,262	732	18,510

HOMESTEAD Entries.

AGENCY	1898	1899	1900	1901
Alameda.	177	507	792	658
Yorkton.	165	397	514	470
Prince Albert.	143	513	359	601
Battleford.		8	4	18
Regina.	475	888	985	1,318
Lethbridge.	195	286	347	605
Edmonton.	623	936	1,309	1,699
Red Deer.	108	637	785	890
Calgary.	123	262	679	939
The Territories.	2,009	4,334	5,774	7,195

SALE and Grant of Lands.

	1898	1899	1900	1901
Dominion Government sales.	Unknown	24,500	46,000	74,169
Canadian Pacific Railway Co. sales. . . .	174,493	237,068	313,558	309,857
Acquired under homestead regulations	321,440	693,440	923,840	1,151,200
Total.		955,008	1,283,398	1,535,226

V.--MISCELLANEOUS SERVICES.

GAME PROTECTION.

During the year one hundred and sixty-three game guardians were acting throughout the Territories. In most of the localities where these officers reside the provisions of The Game Ordinance were fairly well respected, but a great deal of illegal shooting was done by land seekers in places remote from the settled districts.

Feathered game was abundant as the season had been favourable for a good hatch of chickens, and ducks bred freely about the prairie sloughs. Moose were reported to have been frequently met with in the extreme northern portions of Alberta, and many fell victims to the rifle. Prairie fires in the Little Bow country, a favourite grazing ground, drove many antelope eastward to the Medicine Hat district where the Indians made great slaughter amongst them. A number of complaints have been made through the press relative to the wanton killing of large game, out of season and in, by wandering Indians. This is said to be the case particularly about the Battle River country in the neighbourhood of Iron Creek, and more or less throughout all that section lying between the Red Deer and North Saskatchewan Rivers.

The number of licences applied for has fallen off considerably, as only seven were issued during the year under Section 20 of the Ordinance. No returns were made of guest licences issued.

PRAIRIE AND FOREST FIRES.

The total number of fire guardians holding office during the past year was two hundred and five, of which eleven were new appointments. Four of these new guardians are forest rangers in the employ of the Federal Government.

Owing to the rank growth of grass the fires which swept over the western prairies were very destructive and hard to control. In the Little Bow district between Calgary and Macleod, a great deal of damage was done, cattle and horses suffering severely, and even the antelope fell a victim to the fire in many instances. It is said that one stockman who had 1,000 head of cattle was only able to gather some 700 after the fire in November. Disastrous fires also occurred on the Calgary and Edmonton line through which a large area of country was burned over, 10,000 tons of hay destroyed and several settlers burned out. East of Calgary on the main line of the C. P. R. another fire spread for many miles. Between Medicine Hat and Maple Creek fires broke out at many points along the railway, causing heavy losses to a number of the ranchers, some of whom were compelled to move their flocks of sheep considerable distances and to erect new sheds. To the north of Qu'Appelle and through the Loon Creek district some heavy losses were sustained by settlers and by the Sioux Indians on their reserve.

The causes of these fires are sometimes hard to determine, but there is no doubt many were started last season by sparks from railway engines. Firebreaks as they have been constructed are wholly inadequate for the purposes intended, even when ploughed in time, which was not done last season. In some cases individuals were heavily fined for letting fires get beyond their control while burning about haystacks.

Complaints have been made respecting the risk of fires from moving traction threshing engines over the prairie trails in ranching districts. In some portions of Alberta and Saskatchewan, where the brush has been making considerable growth during the recent wet seasons, great vigilance will now have to be exercised by all interested to prevent fires.

VI.—PUBLIC HEALTH.

OUTBREAKS OF CONTAGIOUS AND INFECTIOUS DISEASES.

The average number of "scare" telegrams and letters were received in the Department during the year reporting outbreaks of alleged infectious diseases. Wherever it could be ascertained that any reasonable doubt existed as to the nature of such outbreaks they were duly investigated by a medical man.

About the beginning of the year Dr. Deyell, of Alameda, was called on to investigate an outbreak of diphtheria in a destitute family living about eight miles north of that town. The necessary preventive measures were taken and no fatalities occurred. An outbreak of diphtheria also occurred at Cardston. These cases were attended by Dr. Brant and quarantine duly established. A death from diphtheria was reported by the Mounted Police to have occurred during an outbreak in January at Moose Jaw. All houses, where the disease was prevalent, were duly quarantined. Owing to the prevalence of diphtheria in

February in the neighbourhood of Oxbow, Townships 3 and 4 in Ranges 1, 2 and 3, west of the Second Meridian, were declared a quarantine district, with Dr. R. F. Grier as health officer. This action was taken upon the request of the residents. At Smithsburg, 16 miles west of Rosthern, three deaths from supposed diphtheria were reported in March and investigated by the Mounted Police. As the people were reported to be unable to pay for medical attendance from Rosthern or Duck Lake, Dr. Tyerman was sent from Prince Albert to attend the patients and two houses were quarantined by him. One case of diphtheria occurred in a destitute family in the Jewish colony near Wapella in May, which was attended by Dr. Brown.

In June last Dr. Kemp reported to the Board of Health of the Indian Head Municipality, that there were six cases of scarlatina and diphtheria in two families. Quarantine regulations were immediately enforced. The diagnosis in these cases having been challenged, advice was sought, and Dr. Low, of Regina, confirmed the original diagnosis. One child died from diphtheria and another case that developed was duly quarantined.

An outbreak of measles was reported from the Police Detachment at Medicine Lodge in August. The necessary measures for the control of the disease were taken under the supervision of Dr. Calder. During the month of December a serious epidemic of measles existed at Lac St. Ann and Island Lake. From reports furnished by Dr. Whitelaw and by the police, it would appear that fatalities were largely due to exposure and carelessness of those suffering from the disease. The majority of those affected were halfbreeds living in tents. Two adults, and ten minors died.

Under an arrangement with the Registrar of the College of Physicians and Surgeons of the Territories, the names and addresses of all medical men are reported to the Department immediately upon registration. In this way the Department is enabled to keep each one informed as to his duties under The Public Health and Vital Statistics Ordinances. At the close of the year there were 114 physicians in active practice in the Territories, or one to about 1,755 of the population.

SMALLPOX EPIDEMIC.

Early in the past year, when it became evident that the outbreak of smallpox, then prevalent, could not be brought under control without the adoption of heroic measures involving a very considerable expenditure, representations were made to the Dominion authorities with the result that they agreed to assume charge of, and become financially responsible for, all outbreaks of this disease which had occurred during the year or would occur, dealing with them under the provisions of the Territorial Public Health Ordinance. Dr. James Patterson, of Winnipeg, was accordingly appointed by the Dominion Minister of Agriculture to take charge of this portion of the work of the Public Health branch of this Department under the instructions of the Director General of Public Health at Ottawa, but working in harmony with this Department. I attach a brief report upon the subject by this officer.

Report of Dr. Jas. Patterson, Dominion Quarantine Officer.

Having been asked by the Dominion Government to take control of quarantine against smallpox in the Territories, to be guided by the Territorial Health Ordinance and to act in harmony with the Territorial Government, I beg, at the end of the year, to present a short report on the subject.

Upon the ninth of April last I was asked by the Dominion Department of Agriculture to go to Edmonton and take what steps I thought advisable for the eradication of the disease in that district, where it at that time especially prevailed. Upon the 22nd of May my instructions were to assume control of all smallpox affairs in the Territories.

Upon my arrival at Edmonton, early in April, I found considerable diversity of opinion existed amongst laymen and medical men as to whether the prevailing disease was smallpox or chickenpox. Those who claimed it to be the latter disease based their opinions upon the observation of a very limited number of cases, upon the modified character of the eruption, the absence of pitting and upon the slight mortality. Those who held it to be smallpox did so upon the observation of a much larger number of cases and a critical examination into the diagnostic symptoms. This divergence of opinion was not new nor was it peculiar to Edmonton. It had occurred in place after place in the United States to the south of us, where the disease prevailed from the Gulf of Mexico to the Canadian boundary, and from ocean to ocean, for about two years previous to its spread into Canada. I found that those affected suffered from all the premonitory symptoms of smallpox, viz., vomiting, headache, backache, pains in the limbs and high temperature. These are practically absent in chickenpox. The eruption was most prolific upon the head, neck and extremities; in chickenpox the greatest number of papules are on the body. Pustules, as a rule, were to be seen upon the palms of the hands and the soles of the feet—this rarely occurs in chickenpox. The patients were, in the majority of cases, adults. Chickenpox is rarely, if ever, met with in adult life. The eruption, in the majority of cases, partook more or less of the character of chickenpox, but in every localised outbreak were to be found a certain number of cases with the pure typical smallpox eruption. After convalescence the stains were those of smallpox, not of chickenpox. The pitting in the mild cases was shallow and observable only upon close scrutiny; in the severe cases deep, well marked and abundant. Recent successful vaccination protected perfectly, whilst it is an established fact that against chickenpox its power is *nil*. The mortality was small, about one per cent., yet much more than the mortality from chickenpox. These facts proved conclusively, to my mind, that the disease was smallpox.

By some the disease is said to have been introduced to the southern part of the United States by persons leaving Cuba immediately preceding the Spanish American War. It spread gradually in all directions and within two years had reached every portion of that country, and had become in some of the central northern states entirely beyond the control of the boards of health. It was carried across the border and appeared in British Columbia, the Territories and in Ontario at about the same time. In the Territories the great majority of cases occurred in what might be called the Edmonton district, that is to say, within a radius of about seventy-five miles of the town. The majority of the

patients were French halfbreeds. English speaking people were by no means exempt; but, remarkable as it may seem, not one single case has been reported from amongst the Galicians or the Doukhobors. I can attribute their immunity to nothing else than successful vaccination upon their arrival in Canada. The disease was epidemic upon all sides of them, whilst their habits of life, their clothing and houses are, undoubtedly, conducive to its retention and propagation. Besides in the district above described, we have had a greater or less number of cases at or near the following points, at various times, viz., Maple Creek, Pincher, Macleod, Lethbridge, Stirling, Magrath, Cardston, Cochrane, Calgary, Crane Lake, Medicine Lodge, Moose Jaw, Regina, Wolseley, Summerberry, Carlyle, Roche Percee, Touchwood, Kirkpatrick, Duck Lake, Battleford, Onion Lake, Lac la Biche, St. Paul des Metis, White-wood, Cottonwood, Fort Pelly and other places.

In the suppression of smallpox the three prime matters to be attended to are isolation, disinfection and vaccination. My first step was to visit the point where the greatest number of cases existed and examine the cases so as to satisfy myself what the disease was. I therefore visited the Smallpox Hospital in Edmonton. I also went to Wetaskiwin—the Duhamel region east of that place, St. Albert and the Alexander Reserve, the country south of Victoria, east as far as Paradise Crossing, Athabasca Landing and Fort Saskatchewan. What I saw upon these trips convinced me without the shadow of a doubt that the disease was smallpox, that the isolation was as perfect as it was possible for the North-West Mounted Police to make it, and that the perfect disinfection of the buildings and contents was an impossibility without their absolute destruction by fire. This could not be thought of on account of the cost the destruction of such an amount of property would entail, and the fact that the people could not with safety live out of doors in tents or temporary shelter. By examination and enquiry I found that very few of the people, young or old, had been vaccinated or revaccinated within the last twenty years. I therefore determined to continue the isolation and disinfection as far as could be and at the same time make a strong effort at general vaccination.

The epidemic had been in existence for a considerable time. The Territorial Government had formed all of this section of the country into a quarantine district and had placed Dr. Harrison, of Edmonton, in charge as health officer. My visits to the points above named in this district convinced me that it was impossible for Dr. Harrison to cover it, on account of its extent and the character of the roads. I divided it roughly into four sections, appointing Dr. Sutherland, of Leduc, for the south; Dr. Tierney, of St. Albert, for the west; and Dr. Aylen, of Fort Saskatchewan, for the east, as assistants to Dr. Harrison, leaving to the last the country immediately around Edmonton and the north to Athabasca Landing.

For two months and a half Drs. Tierney and Sutherland performed their duties very satisfactorily, vaccinating many by visiting the schools and other public gatherings of the people, also at the homes of the people. These appointments were made on the 25th and 26th of April. On May 1st I left for Athabasca Landing, accompanied by Dr. Harrison. There I found there had been eleven cases, all quarantined, treated, disinfected and others vaccinated by Constable Ball, without any medical aid. One died, another was a very severe case, hemorrhagic in character, the

remainder of moderate severity. On my way home from the Landing I called at Fort Saskatchewan and found that an outbreak had occurred at or near St. Paul des Metis. The Territorial Government had proclaimed a quarantine district there and had appointed Dr. Aylen as health officer. He had left for that place on April 29th without doing anything as assistant to Dr. Harrison, and was not to return for a month. In the meantime four cases occurred immediately across the river from the Fort. I had to cancel Dr. Aylen's appointment and, as there was practically nothing for Dr. Harrison to do north, I left this easterly portion in his charge instead of the north.

Another outbreak occurred at Onion Lake. Mrs. Dr. Matheson had been appointed sanitary inspector for the district. Certain reasons, after a time, precluded the possibility of her continuing to perform the duties, and Dr. Macadam, of Battleford, was sent up by the Indian Department to investigate and act. In a short time he returned, claiming to have contracted the disease himself and went into quarantine at Battleford, remaining there the usual time. In the meanwhile the Territorial Government requested Dr. Blouin, of Battleford, to act as health officer for the district, which he did.

Early in the history of the epidemic in the Edmonton District the people and railroad authorities became alarmed at the danger from passengers by rail conveying the disease, if being allowed into the cars without a certificate of recent vaccination from a duly qualified practitioner. After a time this restriction became very irksome to travellers and generally unsatisfactory. The Territorial Government then decided to appoint an official of its own at Strathcona and another at Wetaskiwin to inspect all passengers without the payment of any fee from them. This was the situation in this district, so far as I had anything to do with the matter, early in May. The epidemic was abating, and vaccination in the Edmonton district was being actively prosecuted when I left for Winnipeg.

On May 22nd I was requested by the Minister of Agriculture, Ottawa, to return to Regina and assume general charge of smallpox quarantine matters under the Territorial Health Ordinance. I reached Regina on the 23rd. About the first thing I did was to take into consideration the expenditure up to that date. It was only to be expected that with so widespread an epidemic of disease, so loathsome as smallpox, and so fatal as former epidemics had been, the people would become more or less excited and, therefore, unnecessary expense and unnecessary destruction of property would in some cases occur. Higher wages have to be paid to those in connection with smallpox work than ordinarily, and the impression prevails that because it is smallpox, the municipality or the government ought to provide everything and bear the cost. Such is not the case. All the authorities have to do is to take all necessary steps for the protection of the public, and to provide food, nurses, medical attendance, etc., for indigent patients or destitute persons detained. In this particular, quarantine in smallpox does not differ from quarantine for scarlet fever. I found that visits of medical men from Fort Saskatchewan to St. Paul des Metis and from Battleford to Onion Lake were extremely expensive in proportion to the benefits which could possibly arise from them. I therefore discontinued these and placed for the time being permanently at each of these two points a young medical man as sanitary inspector, to quarantine with the aid of the North-West Mounted

Police, to disinfect and to vaccinate. This arrangement proved much more economical and efficient.

I found the inspection of passengers on and off trains at Wetaskiwin very imperfect. I know this from personal observation and from the policeman on duty there, who told me that it was frequently left simply to him. I therefore at once discontinued it at that point. The inspection at Strathcona was most conscientiously performed by Dr. Braithwaite, and was continued for some time. I insisted that in all cases those affected bear the cost of food, nursing and medical attendance when not indigents; the food to be supplied to indigents in quarantine to be in accord with the ordinary police regulations; the purchase of luxuries to be confined solely to the use of actual patients. The majority of the cases were of such a nature as not to require any medical attendance. I therefore limited the expensive visits of medical attendants to the severer cases.

I found that during the last twenty years no organised effort to secure general vaccination and revaccination had been made in the Territories. In many quite large families not one person had been vaccinated. The school trustee boards formed the only body through which this could be accomplished. I recommended the Territorial Department of Agriculture to issue the following circular to each secretary treasurer, asking the co-operation of the board.

On account of the prevalence of smallpox all over Canada, it is desirous to have the entire population of the Territories vaccinated or revaccinated. This is the only efficient mode of preventing, what may perhaps be, a serious outbreak of the disease next winter, when the infection will be, as it were, concentrated by the closing up and heating of houses.

You have already been advised that an Order in Council has been passed making the vaccination of children attending school after the 1st of August next, compulsory, unless they can produce evidence of recent successful vaccination. In order to facilitate matters, this Department is prepared to supply, free of cost, to all school trustees the number of vaccine tubes required to vaccinate not only the children of school age, but also all others, under or over the age, desiring it. Will your board aid in carrying out this very necessary precautionary measure? If so, let me know how many tubes you may require (one for each person) and they will be sent you.

Any person of ordinary intelligence can vaccinate by following the enclosed directions.

HOW TO VACCINATE.

1. Scrub the part well with soap and hot water then rinse off the soap with pure water.

2. Remove the outer skin over a space about $\frac{1}{8}$ inch square on the upper part of the left arm or upon any part of the legs by scraping with the point of the needle furnished with each vaccine tube until a little serum exudes. Avoid drawing blood if possible. Do not scarify more than the space specified as the pustule which will form might be unnecessarily large. Do not touch the point of the needle with the fingers before using.

3. Apply the vaccine according to the directions on the box. Rub it in with the broad end of one of the little wooden spatulas. Do not touch this broad end with the fingers before using. Let it dry thoroughly before putting down the sleeve; it frequently takes fifteen minutes.

4. Do not use the same needle or spatula upon a second person under any circumstances.

5. It is not advisable to vaccinate a child in manifest bad health, nor one who has any apparent skin disease or enlarged tubercular glands about the neck.

By following the above directions, pure vaccination will be secured and no septic or other sores will follow.

Any person of ordinary intelligence can vaccinate.

The proposition set forth above was cordially accepted, and requisitions came in for about 35,000 tubes. It was promptly supplied, and, I

believe, honestly used. The vaccine used was Slee's, which I considered the most reliable. The reports as to results have been very satisfactory.

For quite a length of time previous to the first of January there were no new outbreaks of smallpox in the Territories. Three cases recently occurred, two at Moose Jaw and one at Regina. In these cases the infection was brought from the east. They were efficiently dealt with and no extension could be traced from them.

Today there are some cases at Roche Percee, Wolseley, Summerberry and Erwood, a new town on the Canadian Northern Railway in Saskatchewan. The infection in all of these cases has been directly traced to the Province of Manitoba, where the disease prevails to a considerable extent.

Allow me to express my esteem for the valuable aid, the efficient services, willingly given by your officials and officials generally throughout the country and the North-West Mounted Police.

STATISTICS of Contagious, Infectious and Communicable Diseases.

[The following table is compiled from returns furnished monthly by the Medical Health Officers of Town Municipalities of diseases scheduled under The Public Health Ordinance occurring within such Municipalities. These have in most cases been sent in promptly and may be considered fairly accurate.]

MUNICIPALITY.	Population	Enteric Fever	Diphtheria	Scarletina	Chickenpox	Smallpox	Total
Edmonton	2,626	9	1	16	10	46	82
Strathcona	1,550	15	3	4	31	.....	53
Calgary	4,152	8	6	21	.....	2	37
Macleod	796	.....	2	.....	2	6	10
Lethbridge	2,279	.....	.....	7	2	11	20
Medicine Hat	1,975	8	.....	.....	.....	3	11
Moose Jaw	2,042	3	5	26	.....	1	35
Regina	2,645	.....	10	.....	1	1	12
Wolseley	459	.....	.....	.....	.....	3	3
Whitewood	359	.....	.....	.....	.....	.....	.....
Moosomin	868	3	.....	5	.....	.....	8
Prince Albert	2,193	8	.....	.....	4	.....	12
Yorkton	700	31	.....	.....	.....	.....	31
The Territories {	1901	85	27	79	50	73	314*
	1900	103	40	82	.....	.....	225
	1899	68	25	32	.....	.....	125

At the close of last year it was considered advisable to make a change in the method of collecting information with regard to the occurrences of contagious and infectious diseases outside of municipalities. Hitherto returns had been required monthly from all medical practitioners, but owing to various unavoidable causes these returns were furnished too irregularly to be of any value. It was therefore decided to ask for the returns quarterly only. This was accordingly done, each practitioner being supplied previous to the end of each quarter with the necessary forms and addressed envelope. I am pleased to say that the result has proved very satisfactory.

It will, of course, be understood that the statistical information referred to covers only cases where medical men are called in. There is every reason to believe that many cases of such diseases occur among new foreign and halfbreed settlements in connection with which not only is no doctor called in but concealment is practised. The following cases were reported as occurring outside of municipalities during the year: Enteric fever 115, diphtheria 38, scarlatina 96, chickenpox 146, smallpox 282. Owing to the utter impossibility of obtaining full reports of cases of measles and German measles, in which it is the exception rather than the rule for a physician to be consulted, it has been decided not to insist upon these cases being reported as the figures compiled on the basis of such very incomplete reports can have no practical or scientific value.

MORTUARY STATISTICS.—Continued.

Number of Column.....		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Brought forward		102	77	67	35	67	4	18	7	6	39	14	...	8	8	6	18	7	2	17	8	18	16	12	6	4	6	5	2	3	5
V.—DISEASES OF THE RESPIRATORY SYSTEM. —Continued.																															
8. Other diseases of the respiratory system		4	4	4	1	1	2	...	...	...	...	...	1	...	1	...	1	1	1	...	...	1	...	2	1	...	...	...	...	...	...
Total		106	81	71	35	68	5	20	7	6	39	14	1	8	9	6	19	7	3	17	8	18	17	12	8	5	6	5	2	3	5
VI.—DISEASES OF THE DIGESTIVE SYSTEM.																															
1. Ulcer of the stomach.....		2	2	1	1	1	1	1	...	...	...	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	1	...
2. Other diseases of the stomach (cancer excepted).....		10	7	6	4	2	3	2	1	2	1	2	2	1	2	...	2	...	...	1	1	...	2	...	...	...	...	1	4	1	...
3. Infantile diarrhoea and gastroenteritis ("cholera infantum").....		37	28	18	19	36	1	1	...	...	23	12	2	...	...	...	...	...	...	...	1	1	1	1	1	2	13	16	1	...	1
4. Diarrhoea and enteritis (not infantile).....		10	9	8	2	6	1	3	...	...	2	...	4	...	...	3	1	...	...	...	...	...	2	...	1	2	...	3	2	...	...
5. Dysentery		6	6	2	4	5	1	1	...	...	3	...	...	1	...	1	1	...	...	...	...	...	...	...	1	...	1	3	2	...	...
6. Hernia and intestinal obstructions		10	9	6	4	5	2	1	1	1	2	...	1	...	1	2	1	3	...	2	2	...	1	...	...	1	1	1	2	...	...
7. Other diseases of the intestines		6	5	2	4	3	1	2	...	...	2	...	3	...	...	1	...	...	...	...	1	...	...	1	...	1	1	2	...	...	...
8. Diseases of the liver		7	6	3	4	3	2	1	1	1	1	...	...	2	1	2	1	2	1	...	1	...	2	1	1	2	1	1	2	...	...
9. Peritonitis (not puerperal).....		7	7	4	3	5	...	2	...	...	1	...	...	1	2	2	1	...	...	...	2	...	...	3	1	...	...	...	...	1	...
10. Iliac abscess (typhlitis, perityphlitis, appendicitis).....		8	8	7	1	6	...	1	1	1	...	...	1	...	2	5	...	...	...	1	...	1	...	...	5	...	...	...	...	...	...
Total		103	87	57	46	72	8	12	6	5	35	14	13	2	10	12	11	6	...	4	3	6	3	8	11	7	23	20	11	5	2
VII.—DISEASES OF THE GENITO-URINARY SYSTEM.																															
1. Acute nephritis.....		10	10	6	4	6	...	4	...	...	2	1	...	1	1	2	1	2	...	2	1	...	1	2	...	...	...	...	3	1	...
2. Bright's disease		14	13	9	5	9	1	3	1	...	...	1	1	3	1	4	3	1	...	...	...	2	3	5	1	...	...	2	1	...	...
3. Other diseases of the kidneys and adnexa.....		3	2	2	1	3	...	...	...	...	...	...	...	...	1	1	1	...	...	...	1	...	...	...	...	...	1	...	1	...	...
4. Vesical calculi.....		1	...	1	...	1	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...
5. Diseases of the bladder.....		3	3	3	...	1	...	2	...	...	...	...	...	...	...	...	1	...	1	...	1	...	1	...	...	...	...	...	1	...	...
6. Diseases of the male genital organs		1	1	1	...	...	...	1	...	1	...	...	...	...	...	...	1	1	...	...	...	1	...	...	...	...	...	...	1	...	...

[illegible]

MORTUARY STATISTICS.—Continued.

Number of Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Brought forward	93	45	49	44	91	1	1	1	90	3									8	8	11	6	8	10	9	10	7	9	2	5
XI.—MALFORMATIONS, DISEASES OF INFANCY, DISEASES OF OLD AGE.—Continued.																														
4. Senile decay	33	11	22	11	11		11	9	2							1	32		5	2	2	2	6	4	1	2	4	4	1	
Total	126	56	71	55	102	1	11	10	2	90	3					1	32		13	10	13	8	14	10	13	11	9	13	6	6
XII.—SUICIDE.																														
1. Poison	3	2	3			1	1	1										1	2											
2. Strangulation or hanging																														
3. Asphyxia	3	1	2	1	2		1	1		1													1	1	1					
4. Drowning																														
5. Firearms	1	1	1	1	1	1	1	1											1											
6. Cutting	2	2	1	1	1	1	1	1											1											
7. Other methods																														
Total	9	6	7	2	4	1	3	1		1					3	1	1	1	2	1			1	3	3	1				
XIII.—ACCIDENT.																														
1. Fractures and dislocations	7	6	7		5	1	1	1			1			3	2		1					1		1	1			3	1	
2. Gunshot	4	2	3	1	2	2	1	1					1	1	2						1	1		1						
3. Lightning	2		2																											
4. Drowning	13	4	8	5	6	3	2	1	1		2		4	1	2	1	2	1				1	3	3	3					
5. Exposure	1	1	1	1	1	1	1	1																						
6. Riding or driving	8	4	6	2	4	3	1						4	3	1	1	1					2		1	1	2				
7. Railways	4	4	4	4	3	1																								
8. Burns and scalds	4	1	1	1	1																									
9. Homicide	1	1	1	1	1																									
10. Other causes	18	11	14	4	11	1	2	3	1		4		3	1	2	2	2	2	1	1	1	1	5	1	1	1	1	2	3	2
Total	62	35	49	13	37	6	10	6	3	1	7	14	12	10	6	7	2	3	2	1	4	5	9	8	8	5	5	7	5	3

VITAL STATISTICS.

The subjoined figures show that this branch of the work maintains the substantial and uniform rate of increase that may be expected in a rapidly developing community. The value of the Departmental vital statistics records is year by year rendered more apparent by the increasing number of applications for searches of and extracts from them and it is a matter of regret that no better arrangements than those at present in existence, which are eminently unsatisfactory, can be made for the safe and convenient keeping of these and other important records in charge of this Department. Considerable progress has been made during the past year in the arrangement and indexing of the large quantity of old records, and it is hoped that this work will be finished during the current year.

The completed census returns not being yet available many interesting statistical comparisons must be deferred until another occasion. Below will be found the crude death rate calculated on the census return of population but, owing to the constant disturbance of the statistical position by the influx of new settlers; it would be unfair to consider this a basis of comparison with other countries or provinces.

The following changes in registrars took place during the year: D. Mandin, of Duck Lake, replaced P. Garnot as Registrar for the Division of Mitchell; Basil C. d'Easum, of Fort Saskatchewan, replaced L. Adamson for Victoria; Walter Walsh, of Oxbow, replaced Thos. Cope for Souris West; and Mrs. A. Gillis replaced A. A. Gillis, deceased, for Whitewood. Owing to the extension of settlement in the country to the north of the line of the Manitoba and North-Western Railway it was found necessary to erect the following new Divisions: Pelly, Registrar, J. C. Murray, Fort Pelly; Good Spirit, Registrar, R. Buchanan, Devil's Lake; and Sheho, Registrar, R. Lawrie, Insinger. These changes necessitated the alteration of the boundaries of the Yorkton and Saltcoats divisions. A readjustment was also made of the boundary between the Indian Head and Wolseley divisions in order that the Indian Head division might coincide with the municipality. There is no doubt that some further readjustments of registration divisions will be necessary at an early date to keep pace with the increasing settlement.

On the whole registrars continue to perform their duties with cheerfulness and promptitude. Many of them appear to take considerable pains to secure returns with correspondingly satisfactory financial results to themselves. One or two, however, have failed to give satisfaction and steps will be taken as soon as possible to replace them by more suitable persons. Three of the present registrars are ladies and their work has been eminently satisfactory to the Department. The difficulty with any system of "payment by results" in the collection of vital statistics is that when the results are necessarily small, owing to the paucity of settlement, the work is often done in a half hearted manner. It might be pointed out that settlement is bound to increase in all divisions and that some energetic missionary work on the part of registrars at early stages of the history of their divisions, may have substantial results at later ones. All the present divisions have gone through the same experiences and as registrars receive twenty-five cents for each accepted return a reference to the subjoined tables will show that some

make considerably over \$100.00 per annum for current returns, not to mention the considerable number of overdue registrations which each registrar sends in.

The continual influx of new settlers, and especially those not of English speaking stock, all of whom are ignorant of the law, presents grave difficulties in the way of a strict administration of The Vital Statistics Ordinance, but it is encouraging to find that in many cases the clergy who minister to these classes of the community render much assistance to registrars, and each year there is less to complain of in this respect.

I regret to say that hitherto no success has attended the efforts of registrars to induce the Doukhobor settlers to comply with the provisions of the Ordinance respecting registration. No doubt coercive measures might be resorted to, but it is questionable whether, at this period at least, such a course would be in the public interest. The Russian idea of registration is not like ours, a matter of protection to the individual, but is connected with such disagreeable things as oppressive taxation and compulsory military service. When these people realise what the full political and personal freedom which they enjoy under our laws means for them it is not anticipated that there will be any trouble in getting them to see this matter in its proper light.

An unsatisfactory feature of the statistics (see Mortality Statistics) is the large number of deaths registered in which no cause is stated. These chiefly come from among non English speaking and halfbreed settlements, and in the case of deaths of over fifteen years of age probably 75 per cent. may be attributed to tuberculosis, and in the case of children under five years of age, congenital debility, improper or insufficient food, unsanitary dwellings and the usual children's ailments will account for the greater number of deaths. These, it is hardly necessary to remark, are all cases where no medical practitioner is called in. The time would appear to be approaching when greater stringency will be required in the law so far as it relates to burials, and it is a matter for consideration whether the enforcement of a system whereby funerals could not legally be carried out without a "burial permit" being obtained from the local registrar, would not be in the interests of the community. Making full allowance for the above mentioned conditions, it would appear that, so far as the English speaking portion of the population is concerned, the law regarding registration is fairly well observed and that our statistics, though not as complete as might be wished, form a fairly accurate measure of the material and social progress of the Territories.

The usual statistics are appended.

VITAL Statistics 1901.

DIVISION	Births	Marriages	Deaths
Banff.....	24	7	15
Batoche.....	126	22	22
Battleford.....	51	7	22
Calgary.....	221	111	145
Cannington W.....	52	17	13
Cannington E.....	4	.....	2
Cardston.....	68	22	20
Edmonton.....	113	53	54
Good Spirit.....	.....	.....	.....
Grenfell.....	67	21	21
High River.....	24	2	14
Indian Head.....	60	31	22
Kinistino.....	13	5	6
Lethbridge.....	87	27	35
Macleod.....	25	29	12
Maple Creek.....	29	12	7
Medicine Hat.....	91	34	41
Mitchell.....	34	5	7
Moosomin.....	81	43	30
Moose Jaw.....	83	24	28
Pelly.....	8	1	1
Prince Albert W.....	37	7	20
Prince Albert E.....	48	16	21
Qu'Appelle N.....	108	21	66
Qu'Appelle S.....	58	11	20
Red Deer.....	138	51	46
Regina.....	139	38	49
Rosthern.....	193	18	47
St. Albert.....	96	20	50
Saltcoats.....	119	14	39
Sheho.....	37	.....	9
Souris W.....	17	18	7
Souris E.....	62	11	17
Strathcona.....	145	34	34
Victoria.....	164	39	29
Wetaskiwin.....	163	43	38
Weyburn.....	25	1	3
Wolseley.....	60	18	16
Whitewood.....	73	21	20
Yorkton.....	154	15	17
The Territories.....	1901	3,097	869
	1900	2,691	827
	1899	2,388	671
Increase over 1900.....	406	42	128

Ratio of births to deaths..... { 1901..... 2.90
 { 1900..... 2.87
 { 1899..... 3.14

	Males	Females	Excess of males
Births.....			
Births.....	1901..... 1,593	1,504	89
	1900..... 1,369	1,322	47
	1899..... 1,251	1,137	114
Marriages.....			
Marriages.....	1901, mean marriage age..... 28.75	Males	Females
	1900, " " " "..... 29.20	23.03	23.26
	1899, " " " "..... 29.54	23.49	

NATIVE Countries of Contracting Parties.

COUNTRY	Males	Females
Canada.....	434	459
Great Britain and Ireland.....	168	116
United States of America.....	83	95
Other countries.....	181	194
Not stated.....	3	5

MARRIAGES by Months.

MONTH	NO.	MONTH	NO.
January.....	91	July.....	93
February.....	74	August.....	54
March.....	39	September.....	68
April.....	76	October.....	68
May.....	40	November.....	103
June.....	79	December.....	84

RELIGIOUS Denominations of Officiating Clergymen.

Roman Catholics solemnised	159	marriages
Presbyterians	255	"
Methodists	150	"
Baptists	41	"
Anglicans	137	"
Evangelical Lutheran	27	"
Mennonites	29	"
Greek Catholics	21	"
Latter Day Saints	18	"
Lutherans	25	"
Moravians	4	"
Evangelical Reformed	2	"
Salvation Army	1	"

		Males	Females
Deaths.....	1901.....	623	442
	1900.....	504	433
	1899.....	405	354

Crude death rate on census population of Territories is 6.70 per thousand.

TERRITORIAL HOSPITALS.

At the last session of the Legislative Assembly Chapter 20 of the Consolidated Ordinances was repealed and The Hospitals Ordinance of 1901 became law, its provisions to go into effect on the 1st day of July. The new Ordinance changed entirely the manner of calculating grants for such institutions. Under the old Ordinance payment was made on the basis of the treatment of "pay patients" and "non-pay patients," which was found a most cumbersome method. Under the new Ordinance an allowance of twenty-five cents is made for each hospital day, irrespective of whether the patient is a pay patient or a non-pay patient, thus facilitating the work of dealing with the returns of these hospitals very

considerably. Many complaints had hitherto been received of the delay which occurred in paying grants and the uncertainty which always surrounded the amount to be paid each hospital. I am pleased to be able to report that this difficulty has now been entirely overcome and that the first payment under the new order of things was made promptly, a fact which was duly appreciated by every hospital in the country. Hitherto the grant to hospitals has been more or less stationary in spite of the fact that the work performed by these deserving institutions is growing in volume every year. Under the provisions of the present Ordinance the per capita allowance is fixed at twenty-five cents which, of course, will have the effect of the annual grant to hospitals increasing in amount in sympathy with the expansion of hospital work.

The coming into force of the new Ordinance necessitated important changes in the hospitals regulations and in the forms which had been in use in connection with returns. A supply of the latter was duly furnished and a circular letter of instructions, copy of which I attach, was sent to the following Territorial hospitals drawing aid under the Ordinance: Victoria Hospital, Regina; Holy Cross Hospital, Calgary; General Hospital, Edmonton; St. Albert Hospital, St. Albert; Victoria Hospital, Prince Albert; General Hospital, Calgary; Public Hospital, Edmonton; Galt Hospital, Lethbridge; General Hospital, Medicine Hat; General Hospital, Macleod.

INSTRUCTIONS TO HOSPITALS.

Payment will in the future be made to Territorial hospitals during the months of January and July of each year. The January payment will be based on the work done by the hospital during the period between the 1st day of January and the end of June, and the July payment on the work done between the 1st of July and the end of December of the preceding year. The Ordinance provides for a payment of 25 cents for each hospital day, and I am directed by the Commissioner to state that it is the intention at present to make this payment in full, so that hospitals may in the future look forward to the prompt payment, semi annually, of an amount which each institution can figure out for itself.

The first payment on account of the fiscal year of 1902 will be made during the coming month and, according to the new regulations, this payment will be based on the returns of your hospital covering the period between the 1st of January and the 30th of June, 1901. I enclose herewith vouchers in duplicate duly filled in with the proper amounts. Kindly have them sworn to in the usual manner and returned to this Department at your earliest convenience, in order that there may be no delay in having the first payment made under the new order of things.

I am further directed to inform you that the following regulation, under Section 5 of The Hospitals Ordinance, has been approved by His Honour the Lieutenant Governor in Council. All such regulations must be rigidly adhered to.

1. Every hospital receiving public aid shall keep an admission book, wherein shall be noted the name and last post office address of any person admitted for actual treatment and stay, also the date of admission and name of disease from which he or she suffers and opposite each such entry, the attending physician or the physician at whose request such person is admitted, shall sign his name.

You will notice that sub section 3 of the interpretation clause (section 2) of The Hospital Ordinance defines the word "patient" as being "a person who is admitted for hospital treatment upon the order of a duly qualified medical practitioner." The above regulation is intended to cover the requirements of the Ordinance of a formal order by the attending or admitting physician in the most convenient manner both to the Department and your institution.

The following is the report of Dr. Kennedy, Inspector of Hospitals:

Report of Dr. Kennedy, Inspector of Hospitals.

I have the honour to report as follows on the general result of my recent inspection of hospitals in the Territories west of Medicine Hat.

In the first place I found a universal feeling of satisfaction at the recent change in the Hospital Aid Ordinance, and the generally expressed hope that the 25 cents a day would be paid in full and not only a percentage of it. The new system is simple, fair to all and, if the 25 cents is paid in full, will grant a very reasonable amount of assistance.

I would very respectfully suggest as to the regulations to be prescribed.

1. That patients should be admitted only on the order of a duly qualified medical practitioner. I have gone into this question at some length in former reports and need say nothing more on the subject.

2. That when in the judgment of the patient's medical adviser he is well enough to leave the hospital he, the medical adviser, should sign a form of discharge. I have also in former reports adverted to the reasons which make this desirable.

3. That when a patient has been in any hospital for a lengthened period, say four months, the authorities of the hospital should be required to present a report from the patient's medical attendant, such report to be forwarded to the inspector, setting forth briefly the nature of the case and, if necessary, the reasons which might necessitate a still longer stay.

4. That the half yearly or quarterly returns should include the disease.

5. That cases of lung tuberculosis should not be admitted to public wards.

Regarding this last, some of the hospitals refuse to admit this class of case to any of their wards. I am not one of those who believe that patients afflicted with pulmonary phthisis should be regarded as lepers and until some other provision is made I think they can be treated better and more safely in private or special wards in hospitals than in ordinary houses, where they mix more freely with the general public, and where their habits cannot be so well supervised; but I would draw the line at this point, and strongly urge that they be excluded from public wards where they would be a direct menace to other patients with presumably lessened vitality, and who would, therefore, be much more apt to receive the infection than persons of normal health and powers of resistance. The whole subject brings up very forcibly the necessity for the establishment of consumptive sanatoria throughout the country. Patients in the eastern provinces are advised to come west for the advantages of the pure air, elevation and dryness which do not belong exclusively to us. They come and are looked on as pariahs. Hospitals turn them away, and boarding houses refuse to admit them. They are sick and require treatment just as much as other patients. What is to be done with them? The Government and the public must face the question before long, but, in the meantime, I think the position I take is the rational one and one that will commend itself to the intelligent medical opinion of the country. It is as I have outlined before—

1. That they should not be admitted to the public wards with other patients.

2. That private ward patients should be allowed admission to any hospital.

3. That hospitals should be urged to set aside one ward if at all possible for the use of these patients.

In this connection I might remark that the isolated wards (which do not isolate) of most of the hospitals in the Territories, notably the Calgary General, Holy Cross and Edmonton General, would make very fair places for the treatment of such cases.

The Holy Cross Hospital.

I have the honour to report that on Wednesday, August 21st, I visited and inspected the Holy Cross Hospital, Calgary.

There were ten patients in the institution at the time of my visit, and these were all fit patients for hospital treatment excepting one, a Mrs. Ferland, who had been an inmate since April 12th, having been admitted while suffering from la grippe, but whose only disease at present is old age. I have advised the hospital authorities that she is not a proper subject for hospital treatment and have suggested the advisability of having her friends look after her.

Of the ten patients in residence at the time of my visit eight were pay or partially pay patients, and the other two free.

The hospital itself was as usual neat and clean in every part, the patients appeared to be well looked after, and there were no complaints.

The operating room has been much improved, and is furnished with a new table and much better appliances than on my last visit.

This hospital has the following accommodation:

Public wards	{ For men.....	8 beds
	{ For women.....	4 "
Private wards	{ For men.....	8 "
	{ For women.....	6 "
	{ For children....	2 "
Isolated wards.....		10 "

or a total of 38 "

The isolated part of the hospital is isolated only in name. It is formed of the top storey, and patients and nurses to get to or from it have to traverse the corridors and stairs of the rest of the building. I have pointed this out before, and I believe now that the authorities are impressed with the gravity of the defect that their efforts will be directed towards erecting a separate building for the reception of cases demanding isolation.

Some clerical errors appear to have crept into the last returns; but it is satisfactory to note that the new system of aid to hospitals will make clerical errors like these impossible.

In conclusion, the hospital is doing good work and its facilities for the treatment of private patients particularly, are not excelled by many places four times the size of Calgary.

Calgary General Hospital.

I have the honour to report that on Thursday, August 22nd, I visited and inspected the Calgary General Hospital.

There were six patients in the institution at the date of my visit, and their cases call for no special mention, they being all fit subjects for hospital treatment.

Every part of the building was found to be neat and clean, and in good order.

Since my last visit a substantial and commodious building has been erected for the purpose of a maternity hospital and nurses home. It is well equipped and furnished and has added immensely to the usefulness of the Calgary General Hospital, as well as to the comfort of the nurses employed in the institution.

The hospital now has the following accommodation :

Men's ward.....	9 beds
Women's ward.....	4 "
Private ward.....	6 "
Isolated ward.....	4 "
Maternity ward.	6 "

or a total of 29 "

The staff consists of a lady superintendent, a head nurse and eight pupil nurses, and the school has already, in spite of the comparative scarcity of clinical material, turned out some very excellent nurses.

The isolated portion of this hospital also leaves a good deal to be desired. It is part of the main building, is not walled off from the wards and is used sometimes for noninfectious cases.

It should be the aim of the board of directors to provide a separate building for patients requiring isolation.

This hospital is doing good work and the accounts and returns are well kept by the honorary secretary, Mr. T. S. C. Lee.

Edmonton General Hospital.

I have the honour to report that I visited and inspected the Edmonton General Hospital on Saturday, August 24th.

There were twelve patients in the hospital at the date of my visit, and they were all, in my judgment, fit subjects for hospital treatment. The only remark which I feel called on to make is that of the twelve, five were cases of tuberculosis in one form or another and three of these five were cases of lung trouble. One was only in temporarily, and was to be discharged immediately, one was occupying a private ward and one was with the other patients. I pointed out to the mother superior and to the attending physician the undesirability of having a phthisical patient mixing freely with the others, and in future this will be guarded against. The subject will be further treated in my general report.

This building being constructed on the same general plan as the Holy Cross at Calgary with the isolated wards on the top flat, my remarks are equally applicable to it.

The hospital was scrupulously neat and clean in every part and there were no complaints.

Edmonton Public Hospital.

I have the honour to report that I visited and inspected the Edmonton Public Hospital on Saturday, August 24th. As this is a new hospital since my last visit, I shall briefly describe it.

It is a frame building of two stories with an attic and basement, dimensions 43 feet by 30 feet, with 12 feet ceilings. It has also a kitchen

14 feet by 22 feet connected by a passage and over the kitchen are two rooms designed for the use of patients requiring isolation. This latter of course is only a temporary arrangement.

There are two general wards capable of accommodating five each, but they are rather crowded with five; five private wards and room for three patients in the isolated wards; a total of eighteen. There is also a fairly well furnished operating room and other rooms for general administrative purposes.

The building is well situated at the east end of the town in a plot of $4\frac{1}{2}$ acres and was erected at a cost of about \$3,000. It is possibly an ungracious act to criticise a voluntary charity organised by generous and unselfish people for the alleviation of suffering, but I think the board of directors would have been better advised had they not attempted to crowd too much into a limited space. The result is that all the rooms, including the public and private wards, are on the small side; there is a general sense of crowding together and an absence of that quietude which is so desirable in a hospital. This latter can be obtained in a greater degree than at present by the plentiful use of rubber matting, noiseless swinging doors, etc., but the defects are radical and will only be obviated when the hospital is able to use a large part of the present building for administrative purposes and build a wing or wings for the use of patients.

Notwithstanding all it has had to contend against the hospital has done and is doing a large amount of good work, as is evidenced by the returns for the half-year ending June 30th, 1901. The fact that it has provision for maternity cases, the necessity for which was indeed one of the most powerful reasons for its being called into existence, is an element in its favour which will make it increasingly useful as the public in the scattered settlements about Edmonton become more generally aware of the advantage such an institution confers.

The staff consists of a matron and two trained nurses, and appears to be highly efficient. The hospital has only been in operation since December, 1900, and has been unfortunate in having been compelled to remain closed on two different occasions owing to the development of cases of infectious diseases in its wards.

At the date of my visit there were ten patients, all fit subjects for hospital treatment, and none calling for special mention.

All the wards and rooms were scrupulously clean and neat, and the institution generally was in good order. There were no complaints.

Medicine Hat General Hospital.

I have the honour to report that on September 1st I visited and inspected the Medicine Hat General Hospital.

There were sixteen patients in the institution at the date of my visit, two in the maternity cottage and fourteen in the general wards. They were all, with one exception, acute cases and proper subjects for hospital treatment. The exception was a man named Thomas Boone, who had been sent from north of Regina by Dr. Edwards and was admitted December 29th, 1900. He had previously been an inmate and had had a stone removed from his bladder. A condition of chronic irritability remained which was somewhat improved by treatment, but he had become almost a confirmed neurasthenic, with apparently the one domi-

nant idea that no existence was possible for him outside the walls of the hospital. As he is a comparatively young man with no organic disease, after consultation with Dr. Smyth, I advised that he be placed on treatment directed to his mental condition for a month or two longer and then discharged.

The hospital was neat and clean and everything was in good order. The nursing staff consists of a matron and six pupil nurses, and all are under the direction of the efficient medical superintendent, Dr. Smyth.

The Galt Hospital, Lethbridge.

I have the honour to report that on the 8th September I visited and inspected the Galt hospital at Lethbridge. There were thirteen patients at the institution at the date of my visit, and they were all fit subjects for hospital treatment. Several of them on account of their long stay in hospital require special mention.

John McDonald was admitted April 29th, 1900, and has, therefore, been an inmate for over 16 months. He has a fracture of the vertebrae and his death is only a question of time, and of a limited time. August Woods was admitted on September 29th, 1900, and has, therefore, been in hospital for almost a year. He is suffering from Potts disease of the spine, and his case has done so well of late as to justify the belief that he will shortly be discharged. Wm. E. Smith has been in hospital since October 8th, 1900, with a recurring ulcer on the face which, up to the present, has resisted treatment. Francis Rochette has also been an inmate for a long time with necrosis of the tibia, but he will soon be well enough to be discharged. Israel Roleau is a phthisical patient who I recommended should be cared for under canvas. This hospital was very neat and clean and everything was in good order. It has accommodation for twenty-seven patients in all, including four in the isolated ward, which is thoroughly isolated. It has a commodious and well-equipped operating room and a larger than usual percentage of the cases is surgical. A first-class ambulance has just been ordered at a cost of some \$500.00 which will very largely alleviate the sufferings of patients in transit to the hospital. This, I believe, is the first in the Territories.

The staff of the hospital consists of a matron and three trained nurses, and they are doing good work. This hospital, originally built mainly for the Lethbridge mines, now serves a large extent of country to the south and east which is rapidly developing and increasing in population, and its already very great usefulness may be expected to still further increase.

Macleod General Hospital.

I have the honour to report that on Wednesday, September 18th, I visited and inspected the Macleod General Hospital.

There were nine patients in the institution at the date of my visit and they were all fit subjects for hospital treatment.

The hospital has the following accommodation :

Public wards.....	10 beds.
Maternity and private wards.....	3 "
Semi isolated wards.....	3 "

or a total of.....16 "

This hospital is smaller than most of the hospitals in the Territories, but it serves a large extent of country, is well furnished, has a fairly well equipped operating room and financially is in good standing. This latter fact, while being notable and I think quite exceptional, does not seem to have inspired the board of directors with the ambition of increasing the facilities or the comfort of the hospital, for I observe that there is still no proper water supply and that the old and laborious method of heating by stoves is still in vogue. I trust that the board will seriously and at once consider the desirability of inaugurating at least one of these reforms.

The staff of the hospital consists of a matron and two trained nurses and is highly efficient. Everything was scrupulously clean and neat, and the general state of the hospital reflected credit on the management.

HOSPITAL Statistics—I.

Name of hospital	Town located in.	Approximate area of district served in square miles	Total cost of buildings	Total cost of furnishing	Cost per patient per day				No. of patients 1901	No. of days treatment 1901	Value of charity work done 1901
					1898	1899	1900	1901			
1 Saltcoats Cottage.	Saltcoats..	closed	7,200.00	1,579.40	1.58	1.81					
2 Victoria	Regina..	45,170	8,181.54	2,434.86		1.88	1.75	1.73	95	2,188	772.02
3 Medicine Hat Gen	Medicine Hat	45,170	29,021.58	5,735.88	.88	.91	1.16	1.22	394	7,310	5,440.33
4 Victoria	Prince Albert	114,000	rented	953.61		2.23	1.21	1.69	158	1,136	978.84
5 Edmonton Public.	Edmonton..		9,888.98	2,450.28				1.23	222	3,430	2,305.07
6 General		50,000	27,493.71	4,354.21	1.49	1.49	1.00	.70	302	5,529	1,568.15
7 St. Albert	St. Albert						1.00	.69	134	1,869	1,154.61
8 Holy Cross	Calgary.	25,000	28,068.74	5,653.22	1.20	1.44	1.28	.91	488	7,304	1,205.44
9 Calgary General.			24,196.01	4,063.60		.99	.94	1.02	489	6,787	2,091.04
10 Galt	Lethbridge.		22,919.22	6,010.58	.88	1.52	1.46	1.41	218	5,219	2,290.46
11 Macleod General.	Macleod	25,000	4,060.00	1,090.85	.98	.98	1.92	1.22	146	2,242	1,390.61
12 The Territories	1901	304,340	161,049.78	34,326.49					2,646	43,014	19,196.57
	1900		153,729.89	27,946.22					2,142	38,519	33,344.62

HOSPITAL Statistics—II.

	Expenditure 1901	Revenue, 1901					Liabilities				
		Contributions from		Pay patients	Outside nursing	Total	Open accounts for running expenses	Interest bearing notes in bank	Mortgages on real estate	Rate of interest paid	Total indebtedness Dec. 31, 1901
		N. W. T. including G. grant	E. Can. and other sources								
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1											
2	3,785.24	3,070.68	1,650.00	1,452.76		6,173.44		4,200.77			4,200.77
3	8,918.20	5,866.36	118.60	3,477.87	330.15	11,792.98	1,429.84		2,000.00		3,429.84
4	1,919.84	2,764.66	47.92	941.00		3,753.58					
5	4,218.90	4,083.62	9.50	1,948.83		38,914.70		9,645.35	7,500.00		17,145.35
6	3,870.30	1,919.64	388.45	2,302.15		5,522.24			23,524.76	5%	23,524.76
7	1,289.61	394.44	112.06	135.00		1,122.75			4,100.00		4,100.00
8	6,646.64	1,335.34	197.20	5,441.20		6,790.25					
9	6,922.74	2,693.47	63.60	4,856.70	376.00	7,989.77	2,750.00				2,750.00
10	7,358.79	4,483.28		5,070.34		9,357.61					
11	2,735.24	1,038.82	29.50	1,223.85	8.00	2,670.32					
12	47,665.50	27,650.31	2,666.77	26,849.69	714.15	94,096.64	4,179.84	13,846.12	37,124.76		55,150.72
	47,168.70	24,519.15	5,021.71	18,762.95	612.75	48,916.56	5,152.17	42,390.06	2,500.00		50,042.23

INCURABLES.

Below will be found a report by the Inspector of Hospitals upon the incurable patients maintained under the arrangement with the Medicine Hat General Hospital. Dr. Kennedy made his report during the month of August when there were four patients cared for in this institution. Since his visit, Wasy Halabousa, of Yorkton, was added to the list.

Report of Dr. Kennedy.

I have the honour to report as follows on the incurable patients at present cared for in the Medicine Hat General Hospital.

1. Charles Moore, age 81, admitted February 25th, 1899. There is really nothing the matter with this patient but senility and the little troubles incident to that stage of life, such as deafness and occasional stomach ailments. He is very helpless.

2. James Gordon, age 73, admitted June 10th, 1899, ataxic paralysis. This is a condition in which no improvement may be expected. He will probably gradually grow worse or some intercurrent disease will carry him off.

3. Robert Reid, age 85, admitted April 27th, 1899. There is little the matter with this man also, excepting senility. He has a hernia and suffers from chronic bronchitis, and occasionally eczema. He is very feeble and can hardly live long.

4. William Bowman, age 67, admitted December 20th, 1893. I have already reported on this case and have nothing further to add.

There were no complaints and judging from my observations and their appearance and surroundings, the patients seemed to be well cared for.

SANITARIA FOR CONSUMPTIVES.

In the general remarks of Dr. Kennedy on his inspection of Territorial hospitals, he strongly recommends that these institutions should be compelled to receive patients afflicted with pulmonary phthisis in special wards, but that such persons should not be admitted to the public wards with other patients. Some years ago the foothills country of the Territories was extensively "boomed" as a favourable district for the climatic treatment of tuberculosis. The City of Calgary, with commendable enterprise, issued a special pamphlet setting forth the advantages of Central Alberta in this respect, which was widely circulated, apparently in the hope of attracting a large number of such unfortunates who, after being cured, would find it necessary to remain in that portion of the country, settling in the vicinity of the town and engaging in agricultural pursuits. The scheme was absolutely sound and feasible. The country around Denver, Colorado, and other noted health resorts in the Western States presenting favourable climatic conditions, has been settled and brought to a high state of development by exactly the same means, and no good reason can be urged why history should not repeat itself in the Canadian North-West. It might also here be stated that statistics show conclusively that the other section of the population of such districts do

not often contract tuberculosis; in fact, that the danger of communicating the disease in a climate unfavourable to its development is not anything like as serious as is popularly supposed.

There can be no doubt that the efforts of the City of Calgary were entirely successful. During recent years a large influx of persons afflicted with pulmonary tuberculosis, or with a predisposition to this disease, has taken place in south-western Alberta, particularly in the Calgary District, and this has led to a most serious, if not disgraceful, state of affairs. The following resolution, passed by the directors of the Calgary General Hospital at the last general annual meeting, explains itself:

Whereas the Calgary General Hospital has been established and conducted for the purpose of alleviating sickness and accidents in Calgary and the territory tributary thereto;

And whereas for that purpose the citizens of Calgary and vicinity, of those interested therein, have contributed generously out of their means and substance for the erection and maintenance of such hospital, and have also secured the co-operation of their friends resident elsewhere towards the said object;

And whereas the only funds contributed by the public generally has been a per capita allowance from the Territorial and Federal Governments, the same as is granted by them to all similar institutions;

And whereas the Territories and particularly the foothills portion thereof are markedly free from tuberculosis; but that immunity therefrom has caused the said area to be, to a considerable extent, a Mecca for parties afflicted therewith, particularly from the eastern Provinces of Canada;

And whereas many of such persons from the eastern Provinces had utilised the hospital for such diseases and to such an extent that some of the medical board of the Calgary General Hospital protested against the admission of such patients, asserting that if such he continued the value of the hospital for the purposes for which it was instituted would be largely injured, in some branches totally destroyed;

And whereas on the receipt of such protest the opinion of every member of the medical board of the said hospital was solicited, and when obtained, it was unanimous in condemning the practice of admitting tuberculosis patients into said hospital. That there remained no other course to be adopted by the hospital management other than denying admission to such patients;

Therefore be it resolved that the Federal Government be memorialised to establish in the foothills or mountains or at such other point or points as may be determined upon, a sanitarium or sanatoria for the treatment of tuberculosis patients;

That as such patients are wholly or nearly so, from other parts than Alberta, it would appear that such district should not be expected or required to contribute more to the erection or maintenance of such sanitarium or sanatoria than its proportion, taking the Dominion as a whole; in short, such expenses should be borne by the Federal Government with the aid of voluntary donations;

That the time is opportune for the setting apart of a tract or tracts required for the successful carrying on of such sanatoria and the erection of the buildings and works necessary to its successful accomplishment. Each year the difficulties of acquiring, isolating and quarantining such locations will be rendered the more difficult and expensive;

That the lamentable results which have manifested themselves in Colorado and other portions of the United States similar, as regards tuberculosis, conditions, to Alberta or portions thereof, by permitting the indiscriminate intercourse of afflicted with others, show the great necessity of speedy and vigorous action to prevent a like condition to be brought into existence here;

That the corporation of the Calgary General Hospital tenders its hearty co-operation in furthering the object sought in this resolution.

The possibility of curing, or arresting the progress of, the great "White plague" has, as everyone knows, received the deepest attention of the most eminent scientists during recent years. This consuming interest in the subject was developed principally by the successful identification of the *bacilli tuberculosis* by Dr. Koch, thus revealing beyond a doubt the fundamental cause of the disease, facilitating diagnosis in its incipient stages and, consequently, making an enormous stride towards

its successful treatment. Dr. Koch's discovery established beyond a peradventure the communicability of tuberculosis and materially disproved the evidence in favour of the theory of heredity. The medical profession promptly initiated a vigorous educational campaign and, as invariably happens in such instances, the dangers surrounding contact with infected patients were very much overestimated by a number of influential cranks with the inevitable result that they succeeded in thoroughly scaring the public.

The first effect of the large influx of consumptives into the Territories and of the "educational" work done by the medical profession, was that the Calgary General Hospital closed its doors against such patients. Public opinion was too well educated to patronise hotels sheltering consumptives, consequently any hotel that harboured such a patient soon lost its business and in sheer self protection they followed the example of the hospitals and, to cap the climax, boarding house keepers found it absolutely necessary to do the same. As matters stand at present, any new arrival who has come to the district in the hope of arresting an incipient attack of consumption and who does not carefully conceal the fact, or who is so far advanced in the disease that the clinical symptoms are evident, cannot depend upon obtaining lodgings unless some charitably disposed private individual takes compassion upon him. Cases are on record where such unfortunate people, far advanced in the disease, applied in vain for admission to hospitals, hotels and boarding houses, finally dying under the most distressing circumstances.

A great many associations have been formed in Eastern Canada during recent years for the alleviation of the condition of consumptives and, while these bodies may have accomplished much useful work, there certainly is no visible evidence of it in the Territories. They are all officially cognisant of the conditions as they exist in the West and the crying need of something being done without delay, but their work seems to be entirely confined to Eastern Canada and they have apparently nothing but sympathy for the unfortunate people who come west to benefit by the climate and are hurried to their graves through lack of proper care and surroundings, so essential in the treatment of this disease. There is considerable force in the statement contained in the resolution above quoted, that there can be no moral obligation resting upon the people of the North-West Territories to support patients going there in quest of health from every portion of Canada. It is safe to state that ninety-nine per cent of the tuberculous patients applying for admission to Territorial hospitals are *bona fide* residents of Eastern Canada and have absolutely no claim whatever upon the voluntary subscribers to the Territorial hospitals. If the people of Eastern Canada were generous subscribers towards the extension of hospital work in the Territories the case might be different, but statistics fail to establish that fact. It is scarcely putting the case too strongly when it is stated that the present position of affairs is indefensible and that steps should be taken without delay by the authorities upon whom the responsibility rests, or by charitably disposed persons, to provide proper accommodation for these cases,

VII.—OFFICE WORK AND ORGANISATION.**DEPARTMENTAL LIBRARY.**

Very important additions have been made to the Departmental library during the past year, and the Department is deeply indebted to a large number of scientific institutions, in nearly every part of the world, through whose courtesy a very useful and valuable technical library is gradually being built up. The following periodicals are received regularly in the Department: Reliable Poultry Journal, Co-operative Farmer, Breeder's Gazette, Tidskrift af Landokonomie, Farming Orange Judd Farmer, Farmers' Advocate, Scottish Farmer, Country Gentleman, Journal d'Agriculture, Irrigation Age, Live Stock Journal, Nor'-West Farmer, Poultry Review, Farming World, Pastoralists' Review of Australasia, Experimental Station Record, Commercial, Bradstreet's, Journal of the Royal Statistical Society, The Crop Reporter (United States), Monthly Weather Review (United States and Canada), United States Consular Reports, The Industrialist (Kansas), Labour Gazette, Queensland Agricultural Journal, Journal of Agriculture, South Australia; Agricultural Gazette, Tasmania; Journal Board of Agriculture, Great Britain; Transactions of the Royal Statistical Society, and Public Health.

OFFICE ORGANISATION.

The most useful and important work which this Department undertakes is undoubtedly that devoted to helping the agricultural classes of the Territories to help themselves; and a very large proportion of the work of the Department is now, as a matter of fact, of a strictly organising and clerical nature, requiring no considerable expenditure of public funds. Such effort is particularly fruitful in a country labouring under the disadvantages, while presenting all the opportunities for co-operative effort, incidental to pioneer conditions.

Since the formation of the Department the tendency has been to divide the office work and administration into separate branches, placing a clerk in immediate charge of each. At the present time five more or less distinct branches have thus been formed. The Statistical Branch deals with agricultural, meteorological, vital and medical statistics; the normal staff is one clerk in charge and one stenographer, but during the fall and winter months it is found necessary to employ extra clerical assistance in connection with the compilation of the figures gathered during the year. The Brands Branch ordinarily keeps two clerks busy; the work is rapidly increasing and it requires long hours to cope with it. The Accountant's Branch handles all remittances and deposits, looks after the payment of all accounts and deals with all work under the Estray, Pound and Herd District Ordinances. The Agricultural Organisations Branch has charge of all agricultural societies, institute work, live stock associations and importation of purebred and improved stock. The work of this branch of the Department has been extraordinarily heavy during the year and gives indication of very rapid development. The Records Branch handles all incoming and outgoing correspondence, which keeps one clerk exceedingly busy in addition to whatever assistance the caretaker is able to give. The adoption of the card index system during the

year threw considerable extra work upon this branch, but once the file index is transferred to the card system much time will be saved in searching for files.

During the latter part of the year the Department moved into new premises near the centre of the town. Not alone are the new quarters more commodious than those formerly occupied, but being nearer the homes of the employees less time is lost in going backward and forwards, which admits of the mid day meal being taken at home instead of at the office as hitherto. The effect of a short absence from the office in the middle of the day has been distinctly beneficial to all concerned.

The absence of vault accommodation is a very serious disadvantage in connection with the present offices. Many valuable records, such, for instance, as the vital statistics returns, are quite unprotected from fire, which, should it occur, might cause destruction that it would be almost impossible to repair.

It affords me particular pleasure to testify to the efficient and painstaking manner in which every individual member of the Departmental staff fulfilled his duties during the year. Long hours were cheerfully submitted to and statutory holidays were frequently devoted to over-taking the rapidly accumulating clerical work.

OFFICE WORK.

Below will be found the usual statement showing the volume of clerical work in the Department during the year:

Accountant's Branch.

Year.	Number of deposits made.	Number of vouchers prepared.
1900	2,455	396
1901	2,838	727

Correspondence Branch.

	1898	1899	1900	1901
Letters received.	8,511	10,718	10,475	13,244
Letters sent.	12,195	16,050	17,866	14,700
Circulars sent.	3,949	6,388	12,760	8,812

TERRITORIAL PRESS.

This report would be incomplete without a word of appreciation of the cordial and intelligent co-operation which has ever been accorded the Department by the press of the North-West Territories and the dailies of the Manitoba capital. Much of the educational work the Department undertakes unfortunately only reaches a comparatively limited number of people. As a rule only the most advanced farmers attend institute meetings and similar gatherings, while the retrogressive element stays at home. Consequently the class the Department most particularly

desires to reach voluntarily places itself beyond its influence. Extended newspaper reports of the addresses delivered by practical men on these occasions and discussions thereon are invariably reproduced in the local papers and serve, as a matter of fact, quite as useful a purpose as the addresses themselves. Furthermore, many of the schemes for the improvement of live stock which the Department has initiated depend for their success almost entirely upon the degree of publicity given them and the extent to which the public patronise them. In this respect also the Department has received most cordial assistance from every newspaper, irrespective of political allegiance. It is almost impossible to properly estimate the far reaching power and influence of the press in this western country, where there are fewer social attractions than in more thickly populated countries to divert the attention of the farmer from the chief recreation of rural life, namely, reading, and where the local paper is probably more widely and carefully read than anywhere else in Canada.

CONCLUSION.

I have endeavoured throughout this report to keep the fact prominently in the foreground that the great aim towards which the Department is concentrating its efforts, as far as circumstances will allow, is to *instruct* and *organise* the class of the community whose interests a Department of Agriculture is charged with furthering. In concluding this report I feel I cannot do better than again quote the Right Hon. Horace Plunkett, whose enlightened and progressive administration of agricultural affairs in Ireland has already gained for him a world wide reputation and might well serve as a model for every colony of the empire :

The more we get into our work the more conscious we become of the relative insignificance of the tangible benefits a Government Department can directly confer upon the people as compared with the immense amount of benefit which the people confer upon themselves—by local effort, aided and co-ordinated by a central authority. A full grasp of this principle—a principle accepted by every economist of repute—is essential to any real progress. I should not insist upon this truth were it not that the opposite principle—the principle of direct Government assistance—is still very popular. Our people know what harm Governments can do by interference with their business affairs, and they cannot help thinking that the State has a corresponding power for good. A little thought will, I am sure, bring any man of average intelligence to a sound economic view upon the functions of the Department. Take Thom's Directory and work out in the roughest manner the capital value and the revenue and expenditure of the nation's business within the wide sphere of the Department's work, and you will recognise how extravagantly absurd it is to suppose that any doling out of the Department's funds in direct aid to the nation's industry could increase appreciably the profits derived from it. On the other hand, consider the possible value of knowledge which results in an improved method of production, the saving of an unnecessary waste or a more economical system of distribution. Consider the effect of another 10 per cent., or even 5 per cent., added through improved husbandry to the output of the land, and does anyone say that such an increase might not be realised in this way? To give to our own workers increased opportunities in competition with their rivals in the world's market, that is our function. The first essential of modern industrial progress is the application of scientific and commercial knowledge to industry. To diffuse this knowledge is the duty of all Governments.

I have the honour to be, Sir,

Your obedient servant,

CHAS. W. PETERSON,
Deputy Commissioner.

APPENDIX A.

TERRITORIAL HORSE BREEDERS' ASSOCIATION.

Officers for 1901-02.

President..... W. R. Stewart, Meadow Creek.
 First vice president A. H. Eckford, High River.
 Second vice president H. C. Lawson, Fairy Hills.
 Secretary treasurer..... C. W. Peterson, Regina.

Breed directors :

Clydes..... J. A. Turner, Calgary.
 Shires J. W. McLaughlin, High River.
 Hackneys. A. M. Rawlinson, Calgary.
 Thoroughbreds..... O. A. Critchley, Calgary.
 Standardbreds..... J. R. Sutherland, Calgary.
 Coach breeds. R. G. Robinson, Calgary.

General directors :

D. H. Andrews..... Crane Lake.
 A. J. McFarlane..... Battleford.
 J. Leeds New Oxley.
 Tom Brown Lethbridge.
 John Herron Pincher Creek.

Ex officio directors :

G. H. V. Bulyea..... Commissioner of Agriculture, N. W. T.
 F. W. Hodson. Dominion Live Stock Commissioner.

Auditors :

A. H. Eckford. High River.
 D. H. Andrews..... Crane Lake.

Executive committee :

W. R. Stewart Meadow Creek.
 A. H. Eckford High River.
 H. C. Lawson..... Fairy Hills.
 C. W. Peterson Regina.
 J. A. Turner..... Calgary.
 O. A. Critchley Calgary.
 D. H. Andrews..... Crane Lake.

Hon. member :

Geo. Harcourt Secretary Manitoba Horse Breeders' Ass'n, W'peg.

REPORT OF THE SECRETARY.

Mr. Chairman and gentlemen,—I herewith beg to submit my report on the horse raising industry of the Territories and the transactions of the Territorial Horse Breeders' Association for the year 1901.

Market Conditions.

The following statement shows the exports and imports of horses of the Province of Manitoba and the Territories during the past year; with a balance of trade against us of 1,122 head.

Exports.

To British Columbia.....	297
To Manitoba and Ontario.....	4,045
(including remounts)	<hr/>
Total.....	4,342 head.

Imports.

From Ontario.....	1,391
From United States.....	4,073
	<hr/>
Total.....	5,464 head.
Imports over exports.....	1,122 head.

A conservative estimate of the number of horses now in the Territories would be 90,000 in Alberta, 45,000 in Assiniboia, and 15,000 in Saskatchewan, or a total of 150,000 head. The bulk of these are, of course, work animals.

One of the most interesting developments of the horse business of the American continent is the fact that the values of certain classes, or rather all recognised classes, of horses are today higher than ever they were, while the demand for the nondescript horse, or the misfit, is quite as limited as it was during almost any year of the period of depression between 1893 and 1897. Much has been said of the tendency of modern inventions to seriously limit the demand for horses. The effect of the introduction of electric motive power, the bicycle, automobile and other artificial means of conveyance, has not, however, been to lower the value of the *high* grades of horses, but to displace an enormous number of horses hitherto required in connection with tramway and other services, which immediately closed the principal outlet for the misfits from other and more valuable classes. This economic change has been particularly hard on the western range where the number of misfits is, of course, proportionately greater than in districts where horses are raised under farming conditions and accorded individual attention.

An excellent market exists in the Province of Manitoba for heavy ranch horses fit to do farm work and this market, as well as that of the farming districts of Northern Alberta, Saskatchewan and Eastern Assiniboia, is bound to improve as years go by. In order to properly appreciate the position of the horse breeder of the West in respect to markets it is almost necessary to take into account the demand and supply of the Province of Manitoba as well as the Territories. We find that the total number of horses imported into Manitoba and the Territories during the past year was 7,223 from the United States and 3,773 head from Eastern Canada, making a total import of 10,996, against a total export from Manitoba and the Territories of only 297 head to the Province of British Columbia, the remounts for South Africa and a number of Indian ponies which were moved from the Territories to Eastern Canadian points. It would appear that Territorial breeders can scarcely do better at present than devote more attention towards catering to the requirements of the farming districts of the Territories and the Provinces of Manitoba and British Columbia, which are confined practically wholly to horses of the heavy draught type.

The following observations on the "range horse" by Mr. G. M. Rommel, Expert in Animal Husbandry of the United States Department of Agriculture, are of particular interest to Western breeders:

This phase of the horse market is somewhat difficult to treat. When animals are sold on the market as "range horses" it is generally understood that they are unbroken branded horses brought in and sold in carload lots, usually going to the country to be broken, and finally resold as finished horses. On the other hand, if range men are equipped to break their young stock thoroughly and do not brand them, such horses sell as natives, and strictly on their merits.

While the prejudice against a branded horse is not so strong as formerly, a brand still has a very cooling effect on the enthusiasm of a prospective buyer. The memory of the evil disposition of the old horses of this country and the frequently exaggerated stories of its presence today are constantly called to the attention of the public. However, it is safe to state that the character and disposition of the range horse and his individuality are being greatly improved by the enlightened policy of the more progressive ranchmen. His temper is being bettered by closer communication with man and better methods of handling, and the standard of breeding is being raised by the use of large numbers of pure bred sires that have been brought in from the Eastern States and Europe. At the same time the wonderful quality and endurance of the native stock have been retained and, however we may look upon the range horse personally, we must admit that the foundation is there for a very excellent horse stock. The systematic experimenting that has been done by shipping rangers east as youngsters has been very successful, though grades of only average quality were used.

Importation of Inferior Horses from the United States.

The following statement shows the importation of horses into Manitoba and the Territories from the United States during 1901, and the valuation under which these animals were entered.

PORT OF ENTRY.	NO. IMPORTED.	VALUE.	AVERAGE VALUE PER HORSE.
Brandon	1,006	\$59,947	\$59.59
Calgary	1,267	41,675	32.89
Lethbridge	2,806	60,902	21.71
Winnipeg	2,144	67,749	31.60
Manitoba and the Territories ...	7,223	230,273	31.88

At the last annual meeting of the association a resolution was passed urging upon the Dominion Government to fix the sum of \$50.00 as a minimum valuation upon horses entering Canada from the United States. The matter was duly brought before the Dominion authorities and the co-operation of all Territorial and Manitoba members of the Dominion House was invited in order that effect might be given to the desires of the breeders. In submitting the resolution in question I took occasion to point out that the object Territorial horse breeders had in view, in agitating for the imposition of a minimum valuation somewhat in keeping with the necessities of the case, was not to secure the benefits of a protective tariff, but purely as a protection against the importation of inferior stock which must inevitably lower the standard of horses in this country, already much too low, and consequently the reputation of the Territories as a horse producing country. Messrs. Frank Oliver, M.P., Walter Scott, M.P., and Dr. Douglas, M.P., gave the proposal their unqualified support, while Mr. T. O. Davis, M.P. for Saskatchewan, could not see his way clear

to support the proposition as he considered such a move would not be in the interests of the people he represents. I may say that the Manitoba Horse Breeders' Association also forwarded a strong resolution along the same lines to the representatives of that province in Parliament. The subject was fully discussed in the House of Commons on the 14th of March last and objections were raised to the principle of the proposal to impose protection. In reply to this Mr. Oliver asserted that western breeders would be prepared to support the abolition of duty altogether upon horses of a high standard, the importation of which would be a benefit to the industry. It would, in my opinion, be well that this phase of the question should be fully discussed at this meeting and the views of the association embodied in the form of a resolution.

While on this subject it is of interest to note that the minimum duty on horses coming into Canada from the United States is \$30.00 per head for those worth \$100.00 or less, upon animals worth more, 25 per cent. *ad valorem*.

A deputation, appointed at the annual meeting of The Dominion (Ontario) Horse Breeders' Association, interviewed the Dominion cabinet regarding the under valuation of bronchos which have been imported in large numbers from the United States to Ontario during the year and sold by auction. In many cases these animals were driven across the border in the West and then shipped to Ontario as Canadian bred horses. That association suggested a minimum valuation of \$100.00, which would still be below the basis adopted by the United States. Western horse breeders have undoubtedly a serious grievance in this matter and I feel confident that, with renewed efforts during the present year, there will be no difficulty in the way of securing a reasonable basis of valuation on scrub horses brought into Canada from the south.

The attention of this association might also be called to the fact that an enormous number of horses are fraudulently entered as "settler's effects," and consequently come into the country absolutely free of customs charges. Complaints respecting this dangerous traffic have been received from many portions of the Territories during the year, and it is a matter for consideration whether feasible precautions against this abuse could not be imposed on offenders brought to justice. It is most discouraging to the men who invest capital in bringing the best breeding stock the world produces to this country to have the Canadian West made a dumping ground for the misfits and scrubs of Montana and Wyoming ranges.

I have reason to believe that the most glaring cases of abuse, where bands of horses are brought in free on the basis of large land purchases, will be prevented through instructions recently having been given to customs officers only to allow free entry on the basis of 160 acres (16 head) and that exemption from duty on any larger number must be dealt with by way of refund from the Customs Department at Ottawa. This is a step in the right direction.

The most objectionable feature of the present arrangement is, however, the indiscriminate free importations of these inferior horses to the extent of 16 for each settler, many of whom bring nothing else with them than a saddle and camping outfit. These men are, as a matter of fact, not always *bona fide* settlers, but simply horse dealers and only await a favourable opportunity to dispose of the animals where the arm of the law is not likely to reach them, and then promptly return to the States

for a further supply. If horses entered as "settler's effects" could be branded by the customs authorities and a permit to sell, giving full description, issued only after a period of two years has expired, this traffic would soon become unprofitable.

Improvement of Native Ponies.

A resolution was passed at the last annual meeting of the association requesting the Dominion Government to have all Indian cayuse stallions running at large on or off any Indian reserve castrated upon the order of the agent and thus prevent the damage and injury that is now being inflicted upon the settlers who are raising high class horses in the vicinity of Indian reserves, and also that the Indians be furnished with suitable stallions to enable them to improve the native breed of horses. The matter was duly brought to the attention of the Indian Department, and I am pleased to state that steps are now being taken with a view to carrying out the recommendations of the association. I received a great deal of assistance from all the Territorial members of the Dominion Parliament in bringing this matter prominently before the Superintendent General of Indian Affairs.

It would be well to remember that while it is quite proper for this association (formed with the special object of improving the breeds of horses in the Territories) to move in such a matter the interest of breeders in this case is not altogether a philanthropic one. Every inferior horse raised in the Territories and shipped therefrom is a direct loss to local breeders of high class horses, inasmuch as it has a tendency to reduce values all round. The following clipping illustrates the point:

London (Ont.) News: A lot of inferior horses, called Indian ponies and said to have been brought from near Calgary, were sold yesterday in the city by public auction. The lot averaged about \$15.00 per head. "A big price for such a class of horses," was the opinion expressed by some farmers and livery stable keepers present. The country is being flooded by this kind of stock and the horse trade, so important in this country and in this district, is being imperiled. These horses will soon leave their mark and the Ontario animal, which now is looked upon with favour, will be debased. We repeat what we said before, that some action should be taken to protect legitimate breeders in Ontario.

Imperial Remount Purchasing Commission.

I referred in last year's report to the fact that the Imperial authorities had decided to send a remount purchasing commission, in charge of Lieut.-Colonel Dent, to the Territories for the purpose of securing horses for the South African campaign. On the 22nd of May I received notification from Colonel Dent that he expected to be at Regina on or about the 20th of June and I immediately took steps to notify breeders of the fact through the medium of the press. It was Colonel Dent's intention to purchase at Winnipeg, Portage la Prairie and Brandon, before touching the Territories, and to wire me the exact date upon which he could commence purchasing in the Territories as soon as the Manitoba dates had been fixed. Upon his arrival at Winnipeg, however, he decided not to purchase in that province, but to proceed direct to the Territories. This change in the programme somewhat disarranged the plans which had been laid for the thorough advertising of Colonel Dent's dates. The best possible attempt was, however, made to so arrange the dates that breeders would receive the longest possible notice. No pains were spared

to advertise the dates in question, posters being conspicuously displayed everywhere, and in addition to this all horse breeders were notified direct by postcard from Regina. Some of the first points visited were rather insufficiently advertised and the Colonel, therefore, agreed to give return dates and the result was that, with very few exceptions, all breeders in the Territories had ample notice of the dates upon which remounts could be shown.

The following were the classes of animals purchased: Cobs 14.1 to 15 hands; cavalry chargers 15.1 to 15.2 and artillery 15.1 to 15.2 hands; colours—bay, brown, chestnut and black. Exceptionally good iron grays were also accepted. Mares and geldings only were purchased and all horses were to be broken to ride, bridewise, gentle to saddle, mount and dismount. The prices paid were \$85.00 for cobs and \$100.00 for cavalry chargers and royal artillery horses. The following statement shows the number of horses purchased at each point visited:

PLACE	M. I. COBS	CAVALRY	ROYAL ARTILLERY	TOTAL
Calgary	101	82	34	217
High River	50	31	17	98
Cochrane	24	22	15	61
Lethbridge	9	5	4	18
Macleod	107	71	53	231
Pincher Creek	28	14	6	48
Medicine Hat	20	4	3	27
Maple Creek	24	15	5	44
Moose Jaw	3	3	2	8
Kamloops, B.C.	5	7	4	16
Vernon, B.C.	6	1	3	10
Total	377	255	146	778

Summary.

HORSES BOUGHT	NUMBER	PRICE PAID	AMOUNT
M. I. Cobs	377	\$ 85.00	\$32,045.00
Cavalry	255	100.00	25,500.00
Royal Artillery	146	100.00	14,600.00
Total	778	.....	\$72,145.00

Disappointment was frequently expressed where a large number of horses were rejected. Probably not more than 2,500 horses of eligible ages and colour were examined all told, out of which about 35 per cent. were purchased. According to "The Scottish Farmer" seventy useful horses were shown at Keith, Banffshire, out of which only seven were accepted. We certainly fared better in the Territories.

Some objections were also raised to the prices paid, which did not appear to be well founded. It was generally admitted that \$85.00 was a reasonable, even liberal, price for cobs and it was only through direct dealing between the remount officer and the breeder, facilitated by the action of this association, that this figure was offered. In Montana, where contractors stepped in and dealt with the breeder, only \$40.00 to \$45.00 was paid the latter, the balance, less expenses, went into the

pocket of the middleman. \$100.00 for cavalry and artillery horses, although not by any means a high figure, appeared to be satisfactory to most sellers.

Breeders throughout the Territories will doubtless be pleased to learn that, as result of the negotiations which have been carried on between Colonel Dent, the War Office and this association, it has been decided to authorise Colonel Dent again to proceed to the Territories at an early date for the purpose of purchasing horses. The following dates have been submitted for his approval and accepted: Calgary 2nd, 3rd and 4th of June; Macleod 6th and 7th; Pincher Creek 9th; High River 11th, and Cochrane 13th. After that Colonel Dent proceeds to British Columbia and on his return will visit Maple Creek. The only class of horses that will now be purchased is a stout, well bred, riding cob, 14.2 to 15 hands, 5 to 10 years of age, which must be gentle to ride, mount and dismount, and bridewise.

Remounts for Canadian Contingents.

The contract for purchasing horses for the Third Canadian Contingent to South Africa was placed in the hands of Mr. Harland Smith, of Toronto. Immediately after the contract was closed this gentleman considered it necessary to state in interviews, which appeared in several eastern newspapers, that western horses in previous shipments had shown a mortality of 25 per cent. on the voyage out and that it had, therefore, been decided to confine the purchasing of remounts to Eastern Canada. I forthwith wired Colonel Dent in order to obtain authoritative information on the subject and the following reply was received:

Cannot give you exact percentage of losses of western horses on ships, average total loss of all about 4 per cent. western horses, did best of any on sea.

On the strength of this information the following telegram was sent to the Minister of the Interior:

Montreal Star 29th ultimo states Third Contingent horses will probably be purchased in the East as western horses showed death rate of twenty-five per cent. on voyage. Colonel Dent wires western horses shipped by him did best of any on sea. Executive committee instructs me to protest emphatically against discrimination on such grounds.

The efforts of the association were not, however, successful as only 80 horses were subsequently purchased in the West, and these were obtained exclusively in Manitoba.

Remount Purchasing Depots.

A resolution was passed at the last annual meeting of the association to the effect that it was desirable the Dominion Government should establish in the West one or more permanent purchasing depots for horses suitable for army remounts and that these depots should be open for the purchase of horses all the year round. The matter was duly brought to the attention of the Dominion authorities and, while no assurance can be given to the effect that an establishment of that kind will be provided, there seems at least to be no reasonable doubt that some effective scheme, having in view permanent arrangements respecting purchasing of remounts in the West, will be worked out at an early date.

Spring Stallion Show.

One of the most important objects of this association is to develop the horse raising industry through the improvement of the various breeds of horses represented in the Territories. With a view to carrying out active work along this line it was decided, at a meeting of the executive committee in November last, to inaugurate a spring stallion show open to the Territories. In order to place every portion of the country on an equal footing it was decided to offer free transportation to and from Calgary for all stallions entered, provided that arrangements could be made to gather carloads, or even half carloads, along the lines of railway *en route* to Calgary. It was intended that an important feature of the show should be the facilities offered for the purchase, sale and exchange of stallions. Parties owning stud horses that had stood for service in any particular district for a number of years would be able to effect an exchange at this show in a convenient and inexpensive manner. It was hoped that any transportation arrangements made with the railway company would admit of this being done without the payment of extra charges for the return trip. The following simple rules were adopted:

Rules Governing Stallion Show.

1. The management will be under the control of the executive committee of the Territorial Horse Breeders' Association.
2. Entries shall be limited to stallions registered in recognised stud books and owned by members of this association residing in the Territories. Every entry must be made in the name of the *bona fide* owner of the animal.
3. A fee of one dollar will be charged for each entry, which must accompany the application.
4. Entries received by the secretary prior to the 20th of March will appear in catalogue form. Entries positively close on the 1st of May.
5. The breed sections will be as follows: Light Horses: (1), Thoroughbreds; (2), Standard breeds; (3), Hackneys; (4), all recognised coach breeds. Heavy Horses: (1), Clydes; (2), Shires; (3), Percherons; (4), Suffolk punch.
6. The classes in all breeds, except Clydes, will be as follows: (1), Three-year-olds and over; (2), Two-year-olds; (3), Yearlings. In Clydes there will be a class for three-year-olds and one for four-year-olds and over, in addition to (2) and (3).
7. First prizes will be offered in all sections, second prizes in sections of three entries, and third prizes where the entries exceed five.
8. A cup will be offered for the best heavy draught stallion of any breed.
9. No unsound horse will be awarded a premium.
10. The age of stallions will be computed to the first of January.
11. Every care will be exercised by the management to prevent injury to or loss of property, but the association will not be in any way responsible for whatever loss or damage occurs. All persons entering stallions for competition must assume the entire risk during transit and while on the grounds.

Compensation for Horses Killed on Railways.

An arrangement was entered into by the Western Stock Growers' Association with the Canadian Pacific Railway Company whereby a definite schedule of values was agreed upon as compensation for cattle killed on railways. Numerous complaints have reached my office during the year from persons who have lost horses in this manner and the subject appears to be one on which the association could advantageously take action.

General Health.

Throughout the westerly and southerly portions of the Territories very little sickness has taken place amongst horses during the year. The northerly portions of Alberta and Saskatchewan and some parts of Eastern Assiniboia have, however, been troubled with a disease of a malarial nature, commonly called swamp fever, which has resulted in the loss of a large number of horses and has, I believe, been equally destructive in the Province of Manitoba. An investigation into the cause of the disease was made by the Dominion Chief Veterinarian who suggested that the animals were probably inoculated with the germs of the disease by mosquitos.

During the year the Chief Veterinary Inspector for the Dominion, Dr. Duncan McEachran, tendered his resignation and Dr. J. G. Rutherford, of Portage la Prairie, was appointed in his place.

Conclusion.

The event of the year in local horse circles was undoubtedly the sale and subsequent record of Robin Adair 2nd, the hackney stallion imported by Messrs. Rawlinson Bros, members of this association. This horse was sold to Mr. Robert Beith, of Bowmanville, who showed him at the Pan-American Exhibition where he created quite a sensation. Robin Adair 2nd was afterwards exhibited at the New York Horse Show, where he won the challenge cup as best hackney stallion, any age, on the grounds. He was bred by Mr. John Lett, of Thorpe Bassett, near Rillington, England, foaled in 1890. He is sired by Rufus No. 1343, dam Fantail No. 1105 by Denmark No. 177. Robin Adair 2nd was exhibited at the Hackney Society's show in London in 1891 and imported to Canada as a yearling. During his ten years' service in the Calgary district he has sired a large number of colts which will doubtless give a good account of themselves.

Amongst noted importations of stallions direct from Great Britain might be mentioned that of a two year-old Suffolk punch stallion by Mr. J. A. W. Fraser, of Jumping Pound, Alberta. The purchase and importation by Mr. John A. Turner, of Calgary, of the celebrated Clyde mare Princess Patricia, which took first prize and sweepstakes for the best Clydesdale female at Winnipeg, is also worthy of note.

Notice has been given to amend the constitution in such a manner that agricultural societies in the Territories can affiliate and be represented by a duly appointed delegate. I cannot too strongly emphasise the advisability of interesting these societies in the useful work our association is doing and to provide for representation at our annual meetings from every portion of the Territories.

I attended the last annual meeting of the Manitoba Horse Breeders' Association, which was held at Winnipeg during the month of February. Much useful work was done and several resolutions passed urging upon the authorities the adoption of various recommendations made by this association. I think it is very important that there should be the closest co-operation between the two Western Horse Breeders' associations. Our interests are absolutely similar and the problems confronting breeders of the Province of Manitoba and the North-West Territories are identically the same. Two associations working together must necessarily carry more weight than either one of them acting independently.

The membership list for the past year reached the satisfactory number of 121 and indications are that there will be no difficulty during the present year about retaining old members and adding a considerable number of new ones.

A statement of revenue and expenditure, duly audited, covering the past financial year, is herewith attached.

Respectfully submitted,

CHAS. W. PETERSON,

Secretary and Managing Director.

APPENDIX B.

TERRITORIAL PUREBRED CATTLE BREEDERS' ASSOCIATION.

Officers for 1901-2.

President.....Jno. A. Turner, Calgary.
 First vice president.....P. Talbot, Lacombe.
 Second vice president.....D. H. Andrews, Crane Lake.
 Secretary treasurer.....C. W. Peterson, Gov. Buildings, Regina.

Breed directors :

Shorthorns.....H. Raikes, Pine Lake.
 Herefords.....A. B. McDonald, New Oxley.
 Polled Angus.....H. W. Metcalf, Lacombe.
 Galloways.....E. D. Adams, Millarville.
 Dairy Breeds.....C. E. Marker, Calgary.

General directors :

Jas. L. Waters.....Lacombe.
 W. R. Stewart.....Meadow Creek.
 R. A. Wallace.....High River.
 J. A. Caswell.....Saskatoon.
 R. S. Lake.....Grenfell.

Ex officio directors :

G. H. V. Bulyea.....Commissioner of Agriculture, N.W.T.
 F. W. Hodson.....Dominion Live Stock Commissioner.

Auditors :

P. Talbot.....Lacombe.
 D. H. Andrews.....Crane Lake.

Executive committee :

John A. Turner.....Calgary.
 P. Talbot.....Lacombe.
 C. W. Peterson.....Regina.
 D. H. Andrews.....Crane Lake.
 Hon. member.. Geo. H. Greig, Secretary Manitoba Cattle Breeders
 Association, Winnipeg.

REPORT OF THE SECRETARY.

Mr. Chairman and gentlemen,—Great strides have been made in the Canadian North-West in respect to the improvement of cattle since the first importation of purebred female stock reached the Province of Manitoba, *via* St. Paul and the Red River in 1871. This importation was brought to the West by Messrs. K. McKenzie, Snr., of Burnside, and Mr. Walter Lynch, of Westbourne, Manitoba, and was obtained from the counties of Middlesex and Wellington, Ontario. From the modest beginning of two solitary purebred cattle breeders between Lake Superior and the Mountains, the number has increased during the last twenty years to considerably over five hundred.

Encouragement of Purebred Cattle Raising.

Some years ago the Territorial Government, acting in co-operation with the Canadian Pacific Railway Company, undertook to bring

single heads of purebred bulls from any convenient point in the Provinces of Manitoba and Ontario to any point in the Territories at an uniform rate of \$5.00 per head. In order to encourage the local production of purebred bulls arrangements have now been made by the Territorial Government to extend the scheme to carry female stock, under similar conditions, at the rate of \$7.50 per head. This ought to be a valuable concession to any purebred cattle breeder who desires to add one or two choice females to his herd from time to time.

The annual auction sales under the auspices of this association, where animals of local breeding will be brought out under the most favourable conditions, will doubtless have the effect of fostering a decided preference for home bred bulls on the part of ranchmen. Anybody who has had practical experience with bulls recently imported from Ontario appreciates the disappointment incidental to the use of such sires until they become thoroughly acclimated. Another strong feature in favour of the home bred bull is the tendency on the part of western purebred cattle breeders to rear their stock more or less under actual ranching conditions. Most of the imported bulls are sired by pampered individuals, are out of dams that have been accustomed to warm stables and heavy grain feeding, and they are themselves subjected to a rigid fattening process before they are finally placed on the market. Every thinking person will readily admit that good results, under all the hardships of range conditions, could not reasonably be expected from the use of such bulls. As soon as the local breeder can confidently look forward to a ready cash market for purebred bulls of good individuality he will make it his business to cater to the ranching trade and will endeavour to raise his bulls as nearly as possible under the conditions they will be required to face when put to actual work. Other things being equal, the home raised bull, bred and accustomed to ranching conditions, ought to be worth a great deal more to the rancher than the produce of eastern provinces and, by eliminating the fattening and pampering process, our local breeder will be able to sell the rancher a better and healthier animal at a lower price than an equally good individual could be imported for, and still reap a fair profit.

The attached directory will show that there are now in the Territories alone at least two hundred and six purebred cattle breeders in active operation, distributed as follows: Alberta 109, Assiniboia 81 and Saskatchewan 16. Great pains have been taken to make this list as complete as possible, but a number of names have doubtless been overlooked and the undersigned would be particularly obliged to have any omissions and errors in the present list pointed out. Enquiries are received in the Territorial Department of Agriculture almost daily from people desirous of purchasing bulls, and the directory in question is published in the hope of retaining in the Territories some of the business now going to the eastern provinces in order that the home breeding interests may be further developed.

Annual Auction Sale

The unanimous verdict upon last year's sale was that it proved an unqualified success. It demonstrated beyond all doubt that the periodical auction sale is the most profitable, convenient and satisfactory medium for buying, selling and exchanging purebred stock of all classes. It

speaks volumes that every one of the breeders who entered stock for sale last year is enthusiastically in favour of these sales as a permanent institution and, also, that not a single objection or complaint, either by seller or purchaser at this sale, has reached the office of the association up to date.

It can scarcely be denied that last year's sale was somewhat defective in point of management. The organisation work was undertaken in a very hurried manner and the advertising was not as complete as is desirable. The venture was an entirely untried one in the West and the difficulties in the way great, but the committee in charge did its best to give the principle a fair trial, and it may now be taken for granted that the annual sale institution has taken firm root in Western Canada and will grow in popularity each year.

The highest priced bull sold at last year's sale realised \$250.00, and the honour of raising it belongs to the firm of Messrs. Peter Talbot & Sons, of Lacombe, of which our vice president is the senior member. This firm sold four home bred yearling Shorthorn bulls averaging \$148.75 per head. Messrs. Laidman Bros., of Lacombe, disposed of two animals for \$118.50 each. Thomas Copland, of Saskatoon, obtained \$130.00 for one bull, and the same price was realised for a bull sent by Thomas Talbot, of Lacombe. The Canadian Land and Ranch Company, of Crane Lake, sold 17 Shorthorn heifers and cows at an average price of \$75.00 per head. Had these cows been in better sale condition the prices would have ranged much higher. There were in all 64 cows, heifers and bulls put up for sale which realised a total of \$5,451.00, an average of \$85 17 per head. These animals belonged to twenty different parties and came from Lacombe, Urquhart, Okotoks and Calgary in Alberta; Saskatoon and Rosthern in Saskatchewan, and Crane Lake and Graburn in Assiniboia. A number of animals were in very poor condition owing to the scarcity of feed in some portions of the country, due to the dry season, and consequently sold at low prices. The consensus of opinion was, however, that every animal put up for sale brought every cent it was worth.

The most unmistakable lesson that the 1901 sale conveyed to breeders was that, in order to obtain the maximum value for purebred cattle at an auction sale, the animals must be in good, thrifty condition. It was found that the difference in prices between thin and fat cattle, otherwise of equal merit, would range from \$25.00 to \$40.00. It is obvious that, until the ranchers are prepared to pay more for merit than for condition, breeders cannot afford to send animals to the sale that do not carry all the flesh they can put on through legitimate feeding. It was also noticed that a marked preference was shown for two-year-old bulls. Insufficiently developed and "short" yearlings do not sell so well proportionately. In order to bring these points prominently to the attention of contributors to the present year's sale, a short pamphlet was prepared and extensively distributed amongst breeders where stress was laid on the necessity for the better conditioning of animals intended for the sale.

As intimated in last year's report, the Dominion and Territorial Governments came forward and gave substantial financial assistance towards the sale. All cost of transportation to and from the sale was defrayed by the Territorial Government, while the Dominion Government paid all other expenses.

At a meeting of the executive committee the rules of sale were revised to a very considerable extent. The new rules are herewith attached :

Rules Governing Auction Sale.

1. The management will be under the control of the executive committee of the association.
2. Entries for the sale must be received by the secretary on or before the 20th March.
3. The association undertakes to issue a catalogue of entries received prior to that date, giving full information as to pedigrees of stock entered, to place this catalogue in the hands of probable buyers and to do such other advertising as will bring the sale to the notice of interested parties.
4. All animals entered must be owned by members of this association who are *bona fide* residents of the North-West Territories.
5. An entry fee of one dollar for each animal must accompany the application.
6. An entry ticket will be issued for each animal entered, which must be presented to the sale superintendent before an animal will be admitted to the building.
7. Animals not properly entered will not be allowed on the grounds.
8. Stock must be in the stalls or in the pens, not later than 3 p.m. the day prior to the sale.
9. Cattle must be halter broken and each animal supplied with a good halter. Where this is not done the superintendent has instructions to buy a suitable halter and collect the cost from the owner of the animal.
10. Each animal offered must be in sound health and shall be registered in a record recognised as reliable by the association.
11. As it is very important that intending buyers should feel confident that all animals advertised will be put up for sale, no person will be allowed to withdraw an animal which has been entered and accepted, except on account of death of the animal offered or in case of accident. In case of sickness or death, a certificate from a veterinary surgeon must be supplied at the time of sale.
12. Prospective buyers will be given an opportunity of handling and examining the stock offered for sale, which will be available for inspection from 3 o'clock p.m. of the date prior to the sale until disposed of.
13. The association has arranged to take delivery of all animals intended for the sale, at the seller's nearest railway station, provided that a sufficient number of entries are received from the district to make up a full carload *en route*, and carry them free of charge to the point of sale. Owners must provide at their own expense feed for their animals on the journey and up to the date of the sale.
14. Stock not accompanied by the owner may be consigned to the secretary, and will be taken care of upon arrival at the point of sale.
15. All animals should be registered when entered. A certificate of transfer on the proper form, duly signed with the name of the transferee left blank, must be deposited with the secretary. Blank forms may be obtained upon application to the secretary.
16. Each animal entered shall be sold to the highest bidder. There shall be no hy bidding by the owner of the animal or anyone authorised by him. Statutory declaration may be required from any buyer or seller to the effect that any purchase or sale is *bona fide* and that there has been no by bidding in connection therewith.
17. The privilege and power of withdrawing an animal from the sale at any time, shall rest solely with the executive committee and will be exercised at the discretion of its duly appointed representative at the sale.
18. The highest bidder will be the buyer, and if any dispute arises between two or more bidders, it shall be settled by the animal being again put up and resold. The decision of the auctioneer shall be final in all cases.
19. All purchases must be settled for within one half hour of the sale of the animal. If purchasers fail to settle for their purchases as stated the committee reserves full power to resell the animal to the best advantage either publicly or privately without further intimation, and any loss arising from such resale, together with keep and all other expenses will be collected from the defaulters at this sale.
20. Immediately after each purchase is declared the risk of the animal shall be exclusively with the purchaser, and it is declared that until a settlement shall be made in the terms of these conditions the delivery of the animal shall be suspended.

21. Every care will be exercised by the management to prevent injury to or loss of property, but the association will not be responsible for any loss or damage that may occur.

22. Before an animal can be removed from the building the buyer must present to the superintendent an order signed by the secretary and give a receipt for the animal. This order, together with the receipt, must be left in the hands of the superintendent and will be evidence of the delivery of the stock.

23. The secretary will have power to give receipt in full for all payments for stock sold and will remit the amount realised for each animal to the owner thereof within two weeks after the date of the sale.

24. The animals will be delivered to the various buyers on the grounds where the sale is held, and the buyers will take charge of them at the close of the sale.

25. Experience has demonstrated that purchasers readily pay from \$5 to \$10 per head extra where they can arrange to have stock delivered at their nearest railway station free of charge and without any trouble to themselves. *Such being the case, the association has considered it in the interests of its members to conduct the sale subject to an absolute guarantee that all stock purchased will be delivered free to the purchaser's nearest railway station in the North-West Territories, west of Moose Jaw.* As this arrangement entails considerable expense and, as the resources of the association are limited, it has been decided to deduct from the sale price of every animal shipped to the purchaser by rail a uniform amount of \$2.00 to assist towards covering transportation expenses. It should be understood that this amount, as well as the entry fee of \$1.00 per head, will be paid by or charged to the seller and not to the purchaser.

26. All animals will be fed hay and cared for in the buildings at the rate of 25c. per day, owner finding his own grain. Grain can be purchased at reasonable rates on the grounds.

27. Every person who contributes an animal to the sale, and everyone who bids at the sale, by so doing agrees to the foregoing terms and conditions.

In order to add greater interest to the annual auction sale and to conform to the British practice, it was decided to organise a spring purebred cattle show in connection therewith. The following rules were adopted by the executive committee:

Rules Governing Cattle Show.

1. The management will be under the control of the executive committee of the association.

2. Only animals whose pedigrees are published in the catalogue of sale can be entered.

3. Entries, made out upon the proper form provided by the association for the purpose, must be in the hands of the secretary at least two hours before the time appointed for judging.

4. The decision of the judge is to be absolutely final.

5. There will be a class for each recognised breed of cattle represented and each class will be composed of the following sections: (1) Three-year-olds and over; (2) Two-year-olds; (3) Yearlings; males and females of each.

6. The ages of cattle will be computed to the 1st of January.

7. In sections of three entries, one prize will be awarded; in sections of four entries, two prizes, and three prizes will be given if there are five or more entries. In case there should not be a sufficient number of entries in any one section to qualify for a prize, the various sections of the class may be amalgamated and prizes awarded on the above basis.

8. Two diplomas will be offered as championships in each class represented by at least ten entries, one for males and one for females.

The most convenient premises we were able to obtain for the 1901 sale were the Frontier Stables, which, through an arrangement with the owner, were placed at the disposal of the association for the week of the sale. With a limited number of animals this arrangement worked out satisfactorily enough, but when it became evident that the number of entries for the 1902 sale would be doubled or even trebled, arrangements had to be made on a more extensive and permanent basis for the accommodation of the animals and the convenience of the buyers. With this end in view your executive committee sought an interview with the City

Council of Calgary and, in company with Mr. J. A. Turner, the president, I afterwards attended a joint meeting of the Calgary City Council, the Board of Trade and the directorate of the Inter-Western Pacific Exhibition Company. The question of buildings and other accommodation was fully gone into with the result that Victoria Park was placed at the disposal of the association free of all charges for the week of the sale, the present cattle barns were to be reconstructed according to our recommendations, and it was agreed that a new building containing seating capacity for several hundred people with a convenient selling ring, was to be erected in time for the present year's sale. One of the most serious risks in connection with an annual sale early in the season is the uncertainty of the weather. This will now be entirely overcome through the erection of the covered sale ring, as buyers will be able to attend the sale in comfort irrespective of weather.

It has been argued that the annual sale should follow the example of the Western Stock Growers' Association, moving about to various portions of the country. In view of the proportions which this sale has assumed, such a course would not, in my opinion, be feasible. It is very important for many reasons that the most suitable and central location should be selected and that permanent arrangements be made there both for the accommodation of the stock and the people that come to the sale. Whether Calgary, which was selected for this year, is the place or not, is a matter for the general meeting to decide. In coming to a decision on this point the only consideration that should influence the meeting is the interests of the breeders who take the risk of putting their property up for sale without reserve. They must be assured of the best possible attendance of *bona fide* buyers and suitable accommodation for the stock.

Model Prize Lists.

At the last annual meeting a resolution was passed directing the executive committee to take active steps in the way of preparing a model prize list for the information and guidance of agricultural societies throughout the Territories. Early in the year I procured from each agricultural fair board a number of copies of their last prize list, and on the basis of those prepared a rough draft of the proposed model prize lists, a copy of which together with a complete set of the printed prize lists I had gathered, was submitted to each member of the executive committee and to the president of the Horse Breeders' Association, whose co-operation was invited.

It was not, of course, found possible to prepare any one prize list that would nearly fit all cases. It was, therefore, decided to divide each class into two distinct parts, one being designed for extensive fairs and the other for small local shows. These were designated lists "A" and "B." The object of this arrangement was that in districts where certain breeds were strongly represented, list "A" might be adopted in full or in part, while in others, where such breeds were not so well represented, list "B" would probably cover the necessities of the case. It is not, of course, to be expected that the lists prepared will be accepted in full by any society, nor is it, possibly, desirable that they should be. Local conditions vary and the publication is chiefly intended to be of assistance where local fair boards, inexperienced in such matters, desire to adopt the most advantageous and fair arrangement of their prize list, and the

expectation is that the average Territorial prize list will be made up partly from list "A" and partly from list "B," according to the requirements of the various portions of the country.

The model prize lists when completed were submitted to the Territorial Department of Agriculture for approval and soon after issued as Departmental Bulletin No. 4, by direction of the Commissioner of Agriculture. It is of interest to note that to the Territorial Purebred Cattle Breeders' Association belongs the honour of having led Canada in this matter. The question of preparing such lists has for years been discussed at annual meetings of live stock associations in other provinces, but no active measures have apparently been taken up to date. I understand that the Ontario and Manitoba associations now have the matter in hand and we may expect within a short time to receive the fruits of their labour, which doubtless will be of great assistance to us in revising our lists.

Representation on Fair Boards.

A resolution was passed at last year's annual meeting inviting Territorial agricultural societies throughout the country to provide for the representation of this association on their boards of directors. I accordingly suggested to these societies that such a representative should be given a place on their boards purely in an advisory capacity. I have received favourable replies from the following societies: Stirling (Salteoats), Regina, Inter-Western Pacific Exhibition Company (Calgary), Innisfail, Lethbridge, Strathcona, South-East Assiniboia (Carievale), Maple Creek, Pincher Creek and Lacombe.

A useful work can undoubtedly be done by the right class of men in assisting local agricultural societies with the preparation of their prize lists and the equitable allotment of any money available for prizes. I would recommend that the necessary appointments be made.

Cleaning and Disinfection of Stock Cars.

At the executive meeting held in November last a resolution was passed urging upon the Canadian Pacific Railway authorities the advisability of cleaning and disinfecting all stock cars after use. As soon as practicable I placed myself in communication with the Dominion Department of Agriculture with a view to ascertaining what the obligations of transportation companies were in this respect. I found that, under The Animals Contagious Diseases Act, the Governor General in Council has power to make and enforce regulations respecting such matters and that, under Section 4 of the regulations, railway companies are required to clean and disinfect every stock car before it is again used for the transportation of live stock. I then transmitted the complaint of the association to Mr. J. W. Leonard, General Superintendent of The Canadian Pacific Railway Company, who informed me that rigid instructions on this subject are in effect and that his company is not receiving any complaints, but will be pleased to take the matter up if specific cases could be pointed out. I would particularly urge all members of the association, to whose notice such cases come, to notify me at once of the date, point of shipment and car number.

A further result of the resolution was that the Department sent the

Dominion Live Stock Yards and Car Inspector on a tour through the West, which resulted in considerable improvements being ordered in some of the stock yards.

Obituary.

I deeply regret to have to announce the death of one of our prominent members, Mr William Stothers, of Graburn, Assiniboia, who attended and contributed stock to the last auction sale at Calgary.

Death has also been busy in the larger field of Canadian purebred cattle improvers, Mr. James I. Davidson, of Balsam, ex-M.P. for South Ontario, having crossed the Great Divide during the past year. In the late Mr. Davidson the ranks of Canadian purebred cattle breeders undoubtedly lost their most conspicuous member. In the shorthorn history of the American continent Mr. Davidson's name figures prominently and will live for ages; in fact, in his capacity as the sole American agent of the late Messrs. Cruickshank, he was closely identified with the wide introduction all over the American continent of the now famous strain of shorthorn cattle developed at Sittyton.

Conclusion.

During the year I attended the convention of the Manitoba Live Stock Associations at Winnipeg, representing this association. It is, in my opinion, very important that the closest co-operation should be cultivated amongst all western live stock organisations.

The membership of the association for the past year was fifty-four. I may mention that this has already been doubled this year and the association may confidently look forward to the most loyal support of all breeders of purebred cattle in the Territories. The work that has been taken up has been of so practical and beneficial a nature that it could not help but appeal to all interested parties.

This report would scarcely be complete without a reference to the record sale of the Aberdeen Angus heifer "Black Cap Jud" at Chicago for the sum of \$6,300.00. This is the female record price since 1873. While there is apparently no "boom" in sight, values of purebred cattle evidently show no tendency to decline.

Respectfully submitted,

CHAS. W. PETERSON,

Secretary and Managing Director.

Directory of Purebred Cattle Breeders in the North-West Territories.

Shorthorn Breeders.

NAMES.	ADDRESSES.
Adams, W. H.	Churchbridge, Assa.
*Andrews, Jas. McK.	Davisburg, Alta.
Adams, H. C.	Battleford, Sask.
Allison & Sons.	Pasqua, Assa.
Appleton, W.	Cannington Manor, Assa.
Battell, M. J.	Moose Jaw, Assa.
*Beggs, John.	Arcola, Assa.
*Bolton, J. & E.	Okotoks, Alta.

NAMES.	ADDRESSES.
Bratt, Jesse	Regina, Assa.
*Brett, Paul M.	" "
Baliston, Jos.	Coalfields, Assa.
Beatty, Jas.	Red Deer, Alta.
Beatty, Geo	" "
Bratt, L.	Regina, Assa.
*Bompas, A. B.	Wolseley, Assa.
*Beach, S	Regina, "
*Blake, J. S	Nanton, Alta.
Canieron, John A.	Carlyle, Assa.
*Canadian Land & Rancho Co., Ltd.	Crane Lake, Assa.
Cheyne, Jas.	Oxbow, Assa.
Cook, R. S.	Prince Albert, Sask.
Cooper, J. T.	Calgary, Alta.
Copley, J. A.	Olds, "
*Caswell, J. J.	Saskatoon, Sask.
Copland, Thos.	" "
*Caswell, J. D.	Rosthern, "
*Caswell, Jos.	Saskatoon, Sask.
*Craig, Jno. R.	Meadow Creek, Alta.
*Cowan, R. W.	Cochrane, Alta.
Callin, Jos.	Whitewood, Assa.
Covil, John	Maple Creek, "
Cressman, S.	Olds, Alta.
Cross, A. E.	Calgary, Alta.
*Clark, Jno. Jr.	Crowfoot, "
Dickson, Wm.	Indian Head, Assa.
Dixon Bros.	Maple Creek, "
Dixon, Wm.	Hillesden, "
Dodds, J. & T.	Regina, "
Davidson, J. F.	Prince Albert, Sask.
Davis, T. O.	" "
De Rienzy, S.	Macleod, Alta.
Dixon, Jno. M.	Lamerton, Alta.
Dickson, J. S.	Grenfell, Assa.
Dorrance, Jos. H.	High View, Assa.
*Douglas, Geo.	Priddis, Alta.
Drew, Geo. M.	Yorkton, Assa.
Dunn, Jno.	Ellisboro, "
*Day, H. A.	Lacombe, Alta.
Einarsson, J.	Logberg, Assa.
*D'Eyncourt, Capt.	Calgary, Alta.
English, S. R.	Strathcona, Alta.
*Fauquier, H. H.	Maple Creek, Assa.
Farrar, Miss H. E.	Penhold, Assa.
Fisher, C. W.	Cochrane, Alta.
Fisher, Jos.	Arrochar, Assa.
Fisher, W. T.	Calgary, Alta.
File, S. L.	South Edmonton, Alta.
Foster, Thos.	Saltcoats, Assa.
*Flewvelling, H. F.	Lacombe, Alta.
Fall, Wm.	Broadview, Assa.
George, H.	Innisfail, Alta.
Gibson, Wm.	Wolseley, Assa.
*Grant, Jas. S.	Osler, Sask.
*Greeley, H. A.	Maple Creek, Assa.
Green, Fred. W.	Moose Jaw "
Gunn, Peter	Perley "
Grenall & Co.	Yorkton "
*Gourlay, D. C.	Lacombe, Alta.
*Gaetz, John	Red Deer, "
Gardiner, H. E.	Broadview, Assa.
Gardiner, A. F.	" "
*Geary, Geo.	Innisfail, Alta.
Glenn, Jos.	Indian Head, Assa.
Grose & Son, Jos.	Lacombe, Alta.
Grennell, Mr.	Cussed Creek, Yorkton, Assa.
Hans, Hy.	Gladys, Alta.
*Hargrave, Jas.	Medicine Hat, Assa.
Hayward, H. H.	Hayward "

NAMES.	ADDRESSES.
Hunt, W. D.	Fairmede, Assa.
Hillhouse, R.	Broadview "
*Hull, W. R.	Calgary, Alta.
Hall, M.	Wishart, Assa.
Harbison, Jno.	Penhold, Alta.
Heubach, W. A.	Touchwood Hills, Assa.
Holland, Hy.	Saltcoats, Assa.
*Henry, J. S.	Calgary, Alta.
*Jones, W. C. & Sons	Yellow Grass, Alta.
Jones, S. H.	Regina, Assa.
Kealy, O. W.	Medicine Hat, Assa.
Kerr, Thos.	Highview, Assa.
Kerr, Jas.	Saltcoats, Assa.
Kidd, Jno.	Fairmede "
Lee, Geo.	Yorkton, "
*Leeds, J. M.	New Oxley, Alta.
Lost, H. S.	Calgary, Alta.
*Laidman Bros.	Lacombe, Alta.
Lee, Jno.	Lathou, "
Laird, G. A.	Broadview, Assa.
Lawrence, J. Sr.	Maple Creek, Assa.
*Lennox, J. H.	Saltcoats, Assa.
Love, G. A.	Red Deer, Alta.
*Laycock, Thos.	Nose Creek, Calgary, Alta.
Maynard, H. N.	Innisfail, Alta.
*Miles, Robt. W.	Saltcoats, Assa.
Moffat, W.	" "
Murray, Robt.	Red Deer Lodge, Alta.
*Metcalf, H.	Lacombe, Alta.
*Mead, F. A.	Pincher Creek, Alta.
Murray, Jas.	Carstairs, Alta.
Martin & Toley	Cochrane, Alta.
*Mitchell, H.	Duck Lake, Sask.
*Morton, Jno.	Lacombe, Alta.
McDermiott, M.	Nanton, Alta.
McLaggan, J. W.	Ellerslie, Assa.
McLean, R.	" "
*McPherson, Jos.	Calgary, Alta.
McNaughton, A.	Didsbury, Alta.
*McGill, A. F.	Lacombe, Alta.
McDonnell, W. W.	Okotoks, Alta.
McCorkell, W. A.	Fleming, Assa.
McMillan, J. A.	Calgary, Alta.
McPhee, Neil	Edwell, Alta.
*McLean, R.	Ellisboro. Assa.
McFarlane, Jno.	Lacombe, Alta.
*McPherson, J. A.	Spruce Grove, Alta.
*McBratney, R. T.	Calgary, Alta.
*McDougall, D.	Morley, "
McKenzie, W.	Calgary, "
*Norton, Jno.	Lacombe, Alta.
*Needham Bros.	Crane Lake, Assa.
Nelles, F. R. & W. H.	Lacombe, Alta.
*Nash, Thos.	Gladys, "
Olsen, A. P.	Red Deer, "
*Page, Robt.	Pine Lake, Alta.
*Paisley, S. W.	Lacombe, "
Phin, R. J.	Moosomin, Assa.
Pritchard, R. J.	Prince Albert, Sask.
Porter, W. E.	Saltcoats, Assa.
Peaker Bros.	Yorkton, "
*Peterson, C. W.	Calgary, Alta.
*Pope, H. J.	Urquhart, "
Postill, W.	Red Deer, "
*Phillips, Chas. B.	Asker, "
*Pratt, Robt.	De Winton, Alta.
*Raikes, H.	Pine Lake, "
*Reid Bros.	Cochrane, "
Rawlinson Bros.	Calgary, "
*Ramsay, Jno	Priddis, "

NAMES.	ADDRESSES
*Riddock, Jas.	Lacombe, Alta.
*Richardson, Geo.	Saskatoon, Sask.
Ross, J. A.	Maple Creek, Assa.
*Richardson, T. W.	Dundurn, Assa.
*Riddock, J.	Morningside, Alta.
*Robinson, J.	Calgary, Alta.
Salkeld, J. L.	Dongola, Assa.
*Samson & Macnaghten	Calgary, Alta.
*Sharp, J. & W.	Lacombe, "
Skilliter, T. A.	Grenfell, Assa.
Speers, A. M.	Battleford, Sask.
Speers, R. G.	" "
Stutt, Jno. A.	Fairmede, Assa.
*Shattuck, W. D.	Davisburg, Alta.
*Skinner, J. D.	Lacombe, "
*Suitor Bros	Gladys, Alta.
Skrine, W.	High River, Alta.
Schutz, C.	Calgary, "
Sateurley, H. J.	Penhold, "
Shaw, Jno.	High River "
Skinner & Son	Katepwe, Assa.
Skinner, F. M.	Bowden, Alta.
Sparrow & Shattuck	Calgary, "
Stone, L.	Yorkton, Assa.
*Scott, H. J.	Innisfail, Alta.
*Smith, Geo. P.	Okotoks, "
*Shook, W. E.	Lacombe, "
*Talbot & Son	Lacombe "
*Thomson, Thos.	Gladys, "
*Troughton Bros.	De Winton, Alta.
*Turner, J. A.	Calgary, Alta.
*Turner, Robt.	Millarville, Alta.
Turner, Jas.	Calgary, Alta.
*Talbot, H.	Lacombe, Alta.
*Townend, Ed.	Cochrane, Alta.
*Thorburn, W. C.	Broadview, Assa.
Tucker, Robt.	Lacombe, Alta.
Thomson, R. R.	Moose Jaw, Assa.
*Wallace, R. A.	High River, Alta.
*Walters, Jas. L.	Lacombe, Alta.
Watson, Mrs. Anne.	Dalesboro, Assa.
Weatherald, Thos. M.	Glen Adelaide, Assa.
*Wilson, Jas.	Innisfail, Alta.
Wood & Anderson	Coulee, Assa.
Wyndham, E. A.	Gladys, Alta.
Walker, Jas.	Calgary, Alta.
*Waines, Ed.	Springbank, Alta.
Waddington, T. B.	North Portal, Assa.
*Windiatte, A. J.	Calgary, Alta.
*Wilson, D. B.	Edmonton, Alta.
Whetham, E.	Innisfail.

Hereford Breeders.

*Boyd Mossom Co.	Bobcaygeon, Ont.
Courtney, Thos.	Prince Albert, Sask.
*Canadian Land & Ranch Co., Ltd.	Crane Lake, Assa.
*Lambert, H. R.	Kennell, Assa.
Levasseur, Bros.	Pincher Creek, Alta.
Muntz, H.	Red Deer Lodge, Alta.
*Macdonald, A. B.	Innisfail, Alta.
Plaxton, A.	Red Deer, Alta.
Van Veen, J. P. D.	File Hills, Assa.
Willoughby, J. H. C.	Saskatoon, Sask.

Aberdeen Angus Breeders.

*Belson, W. H.	Grenfell, Assa.
Collyer, F. J.	Welwyn, "

NAMES.	ADDRESSES.
*Ellett, Chas. C.....	Strathcona, Alta.
*Foulger, H. R.....	Urquhart, Alta.
*Hollis, Jos.....	Kutawa, Assa.
*Lake, R. S.....	Grenfell, "
Rodgers, Jas.....	Panama, Alta.
Traquair, Jno.....	Welwyn, Assa.

Galloway Breeders.

*Adams, E. D.....	Millarville, Alta.
Briggs, B.....	Olds, Alta.
*Cochrane, W. E.....	Mosquito Creek, Alta.
*Canadian Land & Rancho Co., Ltd.	Crane Lake, Assa.
*Ellett, Chas. C.....	Strathcona, Alta.
*Perry, L. N.....	St. Mary's, Alta.
Van Veen, J. P. D.....	File Hills, Assa.

Sussex Breeders.

*D'Eyncourt, Capt.....	Calgary, Alta.
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Jersey Breeders.

Brokovski, Mrs. H.	Battleford, Sask.
Tennant, R. E.	Regina, Assa.

Holstein-Frisian Breeders.

*Flack, S.	Red Deer, Alta.
Laycock, T.....	Calgary, Alta.
Malcolm, H. A.	Innisfail, Alta.
Potter, A. B.....	Montgomery, Assa.
Somerset, Rev. C. E.	Red Deer, Alta.

Ayrshire Breeders.

*Pope, J. C.	Regina, Assa.
Trimble, A. M.....	Red Deer, Alta.

N.B.—Persons in the above list whose names are preceded by an asterisk (*) are members of The Territorial Pure Bred Cattle Breeders' Association.

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